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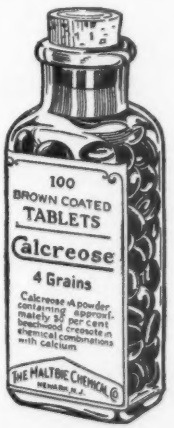

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SOME DEVELOPMENTS IN PUBLIC HEALTH.*

By R. W. GARNETT, M. D., Danville, Va.
Health Officer of Danville.

That phase of the science of medicine which deals specifically with the prevention of disease is of very recent growth. It took its beginning from those epoch-making discoveries of the 19th century in which the great French scientist, Louis Pasteur, was the leader. Up to his time the theory of medicine was based largely upon ages-old conceptions as to the etiology of disease, and the practice of medicine was characterized more as a speculative philosophy than by the spirit of experimental investigation. As some of you will recall, Pasteur was a chemist and not a physician. It was through his studies on wines and vinegars that he first demonstrated to the world the part played in the process of fermentation by minute forms of life and thus succeeded in refuting the generally accepted idea of "spontaneous generation." From his demonstration of the widespread presence in nature of these minute organisms, his next step was to show that a certain disease which was playing havoc with silk-worms was caused by minute forms of parasitic life, and by teaching the peasants how to control this pest through the proper selection of uninfected breeding stock, he saved France and other silk-growing countries untold loss. Later, in the study of anthrax, which was proving to be a great scourge to the live stock industry of his beloved France, he discovered the microbic cause of that disease and succeeded in working out an attenuated virus by means of which animals could be inoculated against the disease. The result of these studies had a tremendous effect on the thinking of the scientific world and struck the final death blow to the old spontaneous generation theory of the causation of disease. Pasteur thus laid the foundation for the modern science of bacteriology which has during the last half century completely revolutionized medical and surgical thinking and procedure.

*Address of President delivered before the Virginia Public Health Association, at Richmond, February 16, 1927.

The most practical outgrowth of this new teaching has been the science and art of preventive medicine and public health work. That the growth of public health knowledge has been astonishing may be illustrated by the well-known fact that the average sixth grade pupil in our modern public school system knows more about the causes of the communicable diseases and their control than did the most noted physicians of 100 years ago. Dr. Royal S. Copeland, former Health Commissioner of New York City and now a member of the United States Senate, made the official statement in 1921 that "generally speaking, where two persons died fifty years ago out of every 1,000 population, only one died in 1920." It is pointed out in a recent report of the United States Public Health Service that the average length of human life in the 16th century was estimated to be between eighteen and twenty years. At the close of the 18th century it was still less than twenty-five years, and as late as 1900 it was between forty-five and forty-eight years. Comparing with these figures the present average length of life estimated at 56 years in the United States, it is recalled that approximately fifteen years has been added to our span of life in this country since 1870. Fifty years ago we were losing during the first year of life nearly 200 out of every 1,000 babies born. Diphtheria was killing forty-five out of every 100 children who contracted the disease. The tuberculosis death-rate has been almost cut in half in the last quarter of a century. Typhoid fever is fast becoming a rare disease.

Within two generations the newer medicine and its offspring, the public health movement, have become important factors in our American life. There are indications that further gains will be made as the program of disease prevention and life extension is developed through the co-operation of the medical profession, the public and civil authorities. With every year that is added, the suffering and misery that accompany illness are minimized. These added years are productive and mean increased prosperity and well-being. At pres-

ent our average life span is twice that of the people of British India and of certain other backward countries. The gains to the public welfare resulting from the work done by the medical and public health professions during the last fifty years are incalculable. How can the medical profession and the public be taught to co-operate in the largest service to the community? The most outstanding single achievement in the past has been the reduction of infant mortality. As more and more emphasis is placed on prenatal care, on the discovery and treatment of syphilis in parents and on better obstetrical service, even greater gains will be made.

The communicable diseases, affecting children principally, are gradually coming under the control of the newer medical practice. The application of recently acquired knowledge regarding positive immunity, developed so successfully for diphtheria, is being extended to protect against scarlet fever and possibly against other children's diseases, and holds out great promise for the future.

In its beginning, organized public health work had to do almost entirely with measures designed to control the great panic producing epidemics through quarantine measures. In its next stage of development, the greatest emphasis was placed upon man's environment and much was said about the baneful effects of "miasms" and of breathing "night air", much of which is still with us, e. g., in the now misnomer, malaria. It is during the evolution of this stage, however, when we find the civil engineer coming to be an important factor in the working out of the great sanitary problems of drainage to prevent mosquito breeding, and of providing for a safe water supply and for the safe disposal of deleterious material,—problems made more difficult and costly by the rapid growth of American cities.

Today we find ourselves in a period when the emphasis is again shifting, for, although the importance of a good water supply and of sewage disposal must never be minimized, yet the health worker today is finding a most fertile field in personal hygiene, where the stress is placed not so much on man's environment as it is upon man himself. Therefore, with this direct rather than indirect approach, this stress upon human values, we find ourselves concerned today with not only a program of public health sanitation, but with public health clinics, public health nursing, the public health laboratory and public health education. In the development of this program during the past decade, the process has been quickened by our war-time experience which served to focus National attention on certain startling facts. So, in recent years, much thought has been given to the correction of physical handicaps and defects of childhood, among which undernourishment is one of the chief,—conditions which are now known to be largely responsible for the fact that nearly one-third of the young men of our country were found to be unfit for military service. It may be truthfully said that, while this significant process of evolution has been going on in the thinking processes of the medical profession, progress almost equally significant has been going on in the minds of the people generally who are more and more seeing the truth of the maxim that "prevention is better than cure and far cheaper."

During recent years we have seen, too, a tendency toward greater socialization in medicine, as much as this term is disliked by many members of the medical profession. Contemporaneous with and partly as a result of this process, we find today so-called industrial medicine as a distinctly modern development. The best elements of the medical profession in any community are really interested in the prevention of disease and have always rendered valuable altruistic service in advice and in teaching the families who look to them for guidance.

But, in the face of these remarkable achievements, there remain certain conditions against which medicine seems, to date, to have been well nigh powerless. These are the diseases of middle life—heart disease, the diseases of the kidney and the blood vessels. They are usually comprehended, because of their inter-relationship, under the general term of cardio-vascular-renal diseases. They reflect the type of personal hygiene practiced by individuals.

The first years of this century gave clear indications of increasing rather than declining death rates from these conditions. Fortunately, however, in the years following the war, some interest appears to have developed in these conditions as causes of death, and there now seems to be a distinct possibility for a material reduction in their incidence. This is a great opportunity for the preventive medicine of the immediate future.

The first step is to develop an extensive plan

for detecting diseases which prey on persons in middle life, before they can do the damage which results in premature old age and death. The periodic medical examination is the most promising effort toward this end. Already thousands of persons are regarding such physical examinations in much the same way as the periodic examination of their teeth. Every day physicians have it in their power to aid their patients in adding years to their lives. Among 17,000 adult white males recently examined, some 13 per cent were found to be over-weight by more than 20 per cent above the usual standards for height and age, and over-weight is the most fruitful source of premature break-down of the heart, blood vessels and kidneys. Suspected focal infection was found in 42 per cent of these cases; more than a quarter of them had enlarged or septic tonsils. These are but samples of the findings, and suggest what a fertile field exists for substantial improvement in the life prospects of persons apparently in good health. Most of these persons became aware of their defects for the first time at these examinations. Fortunately, we have illustrations to show that the periodic health examinations do actually reduce sickness and mortality. For example, in 1914, the Metropolitan Life Insurance Co. inaugurated a system of free periodic health examinations for its ordinary policy holders. Six years later the after-history of the first 6,000 persons examined was studied. According to prevailing mortality tables, 303 deaths should have occurred in this group; and yet only 217 actually took place. This means a reduction of 28 per cent in the death rate, more than enough in reduced claim payments to pay for the cost of the examinations.

The situation, then, is at once a challenge and an opportunity for the medical profession. More and more must medical practice rely on the efficacy of thorough physical examinations. More and more these should become a routine for doctors at the request of the patient. Physicians will thus become counselors of their clientele, showing their patients how to avoid over-weight, how to conserve energy, and how to follow simple hygienic rules of living. But, to accomplish these ends, it will be necessary for the medical profession to develop generally better and more standardized technic for the physical examination.

The public must also co-operate, turning in larger measure to the family physician for examinations while well, not waiting for illness as an excuse for the first visit. The prevention of sickness is becoming rapidly a most important service which the public can receive and should expect from the family physician.

One of the outstanding public health statesmen of our country has said that all physicians may be divided into three groups: first, leaders; second, those who follow the leaders; third, those who absolutely commercialize their profession and see in it only a means of making money. He added that the public health worker must have the sympathy and support of the first two groups and that he must expect to always have the opposition of the last named group. In the minds of this latter, the question is constantly arising as to the encroachment of public health work upon the field of the private physician. As a matter of fact, while the public health movement has neceessarily meant a reduction of the need for private medical service along certain lines, as, for example, in typhoid fever, it has, on the other hand, proven to be a positive means of promoting the work of high class physicians and of teaching the public to appreciate more than ever their service. Stress upon periodic physical examinations and the importance of seeking advice early before the break-down comes are today being given much emphasis. This means that teaching health truths, especially to the young, will serve to offset many of those hurtful influences of our modern living conditions and tend to promote a more vigorous type of manhood and womanhood. By that it will also mean the building up, rather than diminishing, the work of those physicians whose ideals are high and who are prepared to co-operate with the spirit and practice of preventive medicine.

The progress that Virginia has been making during recent years in Public Health work, as well as along other lines, should encourage us to look hopefully forward to the time when all of our counties as well as our cities will see the importance and the value of adequately financed and properly organized health work,—a time when every child born in Virginia shall have a fair chance of being well born and a fair chance to enjoy his birth right of unhampered mental and physical development.

Have we, the health workers of Virginia, then the courage and the vision to enable us to "carry on" patiently and persistently, and

perhaps ploddingly, looking to the consummation of that far off divine event toward which the whole creation moves, holding with Tennyson that:

"Through the ages one increasing purpose runs,
And the thoughts of men are widened with the process of the suns."

THE CORRECTION OF NASAL DEFORMITIES.*

By J. EASTMAN SHEEHAN, M. D., F. A. C. S.,
New York, N. Y.

Professor of Plastic Surgery, New York Post-Graduate Medical School and Hospital.

Before proceeding to the diagnosis of particular cases or describing the surgical procedures that have been devised for the correction of the more familiar deformities, it may be as well to be clear in our minds what is involved in a case of facial disfigurement. There are some in the profession who agree that the surgeon has the right to do what may be needed for the restoration of function but who claim that he oversteps his duty if he goes beyond the strict necessities. However, it is a sound surgical principle to diagnose in terms of loss, and the principle ought to be applied with understanding.

As the patient sees it, the loss here is threefold. There is loss of function; there is detraction from his appearance; there may be loss of earning power. He is entitled to recover all three.

That dysfunction is a menace to health is conceded. The depression resulting from consciousness of a bad appearance is also injurious. The ability to find work is largely dependent upon others, and they are not invariably charitably minded. To be refused the opportunity to earn a living, to be debarred from the prospect of marriage, to be shut out from desirable social contacts, all are very serious matters. They must be taken into account when the correction is planned and at every stage of the procedure. It is the concern for these factors that has compelled the elaboration of those surgical methods which distinguish plastic from other surgery.

That is why it is a law of plastic surgery to avoid making new disfigurements. That is what underlies the devising of a whole range of expedients in suturing. That is what accounts for the constant effort to simplify the procedures. And for the same reason we have been obliged to give intensive study to the skin-graft in terms of its physiology.

The whole tendency at present, as you will note during the clinical demonstrations, is to utilize the tissues of the nose itself, as much as possible, in effecting the correction, and to reduce to the minimum the use of materials from other parts. It is surprising how much can be done in this way in those cases where the disfigurement has been produced by a blow or other injury of like character. The flattened nasal bones are detached from the maxillae and raised and straightened. The cartilages are readily manipulated to give the bridge and alae their normal shape. Very often there can be taken from the distorted and swollen lateral cartilages enough material to fill any remaining depression on the bridge. If not, a bit of ear cartilage can be taken for the purpose. If the septum has been dislocated from its moorings by the force of the blow, something invariably followed by retraction of the columella and distortion at the tip of the nose, it can be re-established as a buttress for the bridge and made to support the columella by means of sutures placed obliquely and afterwards drawn straight, raising or lowering the tip as the case may be. By a slight angular excision from the septum the nose at the tip can be retracted and so shortened; or by advancing the strip so excised and enmeshing it in the columella the nose can be lengthened to normal.

It is not necessary, despite opinions to the contrary, to have two operations where it is required to resect the septum. The preferable method, both for the operator and the patient, is to correct any deflection of the septum at the same time as the rest of the repair. If the physical laws are respected in the remoulding of the nose there is no added danger, no increase in the period of hospitalization, and the patient is spared the repeated operations which he rightly dreads. This applies to young children as well as to others. It has been held by many that in case of injury to the nose at say five to seven years the septum ought not to be resected until about the age of thirteen, at which period the vomer is supposed to have attained its growth. The reasoning is not sound, for with the septum left in the distorted state the vomer does not normally develop.

In those cases where the methods of re-adjustment within the nose can be applied as de-

*An address delivered at Gill Memorial Hospital, Roanoke, Va., March 18, 1927.

scribed, patients leave the hospital in from three to four days, instead of ten days to two weeks as formerly.

Naturally there are cases that cannot be simplified to this extent. In those instances where the upper nose has been flattened by the blow while the lower parts have been left normal, there can be no recourse to the lateral cartilages for material to fill the depression on the bridge. Costal cartilage may have to be emplaced to restore the contour, unless the opening of the chest can be averted by the use of ear cartilage, which is not serviceable except in small depressions.

Similarly, where there is a defect on the surface, or one has to be made for the elimination of scar, it is evident that skin must be brought from somewhere. If the area to be covered is not too large the preferable method is to advance the skin from the adjacent cheek. Besides being the most easily accessible and the most adequately supported in the matter of blood supply, the skin of the cheek is the most perfect match available for the skin of the nose, a factor whose importance is increasingly recognized because of the influence upon the ultimate aesthetic result. If one must look elsewhere for the means of covering a small defect, the first recourse is to the skin of the upper eyelid, always provided there is no pigmentation, as there often is in the eyelid skin, that would cause a blemish in the new position. The upper eyelid can spare a surprisingly large proportion of its skin surface without injury, and a free graft from that area "takes" better than a similar graft from any other part. Secondary recourse is to the prepuce, or to the ear. Color is also to be considered in the first case; otherwise, the thin integument is very effective as a free graft.

If there is nothing for it, because of the size of the defect to be covered, but to bring down a pedicle flap carrying forehead skin, then the law against making new disfigurements dictates that the actual pedicle be lifted from the scalp, and that it carry no more of the hair-free forehead skin than is actually needed. In this way the scarring of the forehead is reduced to the minimum, and the hair covers any wound edges on the scalp after the pedicle is returned.

Notwithstanding that the lessons taught by experience are very definite, it is still necessary to insist that if any material is introduced among the nose tissues to support them in the normal position, that material must be from the patient's own body. All foreign bodies are treated as enemies by the tissues and their certain expulsion is accompanied by abscess, infection, and the making of new disfigurements. Even when taken from the body of another there is danger, for it would seem that differences, chemical or cellular, assert themselves, under the slightest stress, with disastrous results. Costal cartilage is better than any other material for such implants. Its presence is not resented; it lives, and it does not disintegrate or absorb.

On no account whatever should paraffin be introduced into the tissues of the human body. Even the initial risks are startling, as was shown from the beginning of the practice thirty years ago, when blindness and embolisms gave warnings that ought to have been heeded. If this stage is passed in safety it is still positively certain that any paraffin injected will have to be surgically removed sooner or later—if, indeed, it can be.

If the paraffin is in one mass under the skin, there follows a low grade pressure inflammation, the mass becomes encapsulated with fibrotic tissue, and this condition may last for a long time. Sometimes the paraffin disseminates by divers pathways, the film of fibrous tissue around it undergoing change and setting up inflammation, which inflammation may cause a further spread of the material. From this condition it may go into a third stage, the material breaking up into pulverized and invisible particles which invade the meso-ectoderm, replacing the structures with fibrous tissues, devitalizing the skin, and resulting in inflammation, abscess, ulcer, and in some instances malignant degeneration. In the late stages embolism may occur. On exposure, if the paraffin is found to be encapsulated in one place it can be shelled out. But in the later stages the skin is seen to be changed to a dirty yellow color and an odd globule of oil may be noticed. Even before exposure the skin may be seen to be red or cyanosed as the result of circulation disturbance. As the skin has been destroyed, there is no good to be done by merely closing the incision; this will only produce inverted scar. The only course is to get rid of the dead skin and cover the defect so made with skin from another part.

Paraffinoma is appallingly on the increase. It is a disease artifically produced for which

there is not the slightest excuse to be offered by those who produce it.

A word about the incisions by means of which access is gained to the interior of the nose. The intra-nasal incision favored by some European schools is open to two objections. It obliges the operator to apply force on other than direct lines, which in practice has many disadvantages; and the location of the incision is needlessly favorable to infection, while making needlessly difficult its control. Much greater satisfaction is to be had by adopting a more direct method of approach. There are four available, according to the degree of operative difficulty. If the lateral cartilages are to be exposed and shifted, an incision within the nostril, following the curve of the alar rim and a little back of it, best serves the purpose. For somewhat more extensive separation, the columella is freed by an incision along its vertical axis interiorly and retracted to one side or the other. This allows the exercise of force on direct lines and leaves no visible scar. Or the incision may be from the surface through the vertical mid-line of the columella; with proper care in the suturing the scar here is negligible and tends to disappear. Or in special cases the columella may be completely disengaged at the philtrum and lifted out of the way. Here also the scar is negligible. With access to the nose effected in any of these ways the tissues can be manipulated safely and, a matter of much importance, speedily.

The syphilitic nose calls for special and separate mention. We all know the characteristic appearance. In the first stage the corrective procedure does not differ from that used for ordinary "saddle" nose. It is the second stage that has defied, until recently, all efforts to provide correction. With the membrane eroded by the disease and replaced by scar, contractile forces have had free play, with resulting distortion of the nose itself and invasion of the adjacent tissues, producing the characteristic facies, with the familiar hopeless expression. The key to the correction was found in the war hospitals, where the necessity of a lining was recognized, as before it had not been. Previous failure had been due to the non-observance of the importance of the function of the lining membrane. The problem was to replace it, and this has been done by means of the Thiersch graft, held in place by a prosthesis after elaborate preparation of the bed to receive it. It may be a long and tedious process, but it constitutes nevertheless one of the real triumphs of plastic surgery. The third degee of the syphilitic condition involves the loss of all the elements, and the correction is equivalent to total rhinoplasty.

Skin-grafting is inseparable from the correction of nasal disfigurements. The subject is broad enough to take by itself more time than we have at disposal. It will be sufficient for the present purpose to indicate some considerations that press upon the notice of the operator in practice. There is some controversy as to the suitability of the epidermic (Thiersch) graft as a substitute for mucous membrane. Briefly, it is suitable within the nose, in the buccal cavity, in the antrum, and as a lining for the eye-socket, if it is cut so thin as really to be an epidermic graft. The appearance of hair, excessive desquamation, exudation of sebaceous excretions which become rancid and evil smelling, are signs that the graft has been cut too thick and includes a layer of the corium. Otherwise, the substitution for mucous membrane is well nigh perfect. It is not used, however, for replacement of the conjunctiva when the eye is in place; there a mucous membrane graft from the lip or from within the mouth is indicated. On the surface its two limitations are a contractile tendency and the development of a prune juice tint. But the "take" of the Thiersch, when its use is indicated, is 100 per cent.

The full-thickness graft is favored more and more because it can be taken from unexposed parts, thus conforming to the rule against making new disfigurements. At first there was only partial assurance of its "take", the average not much exceeding 50 per cent. Ferris Smith demonstrated that this was due to the application of improper amounts of pressure, and out of his experiments was evolved a method of maintaining the proper pressure, which he also determined (30 mm. mercury). Since then, especially with thin skin like that of the upper eyelid, uniform success can be confidently looked for. The drawback is that the skin of unexposed parts does not match that of the face, either in color or in texture. The red element in skin is determined by the amount of arterial blood held in the capillaries, obviously not the same in exposed and unexposed parts. The skin from covered areas never does quite assimilate; the habit of the tissue is not easily overcome.

If in all these particulars the method is dictated by regard for the ultimate aesthetic result, it follows that in suturing, so readily conducive to scar formation, the utmost refinement of method must be sought with a view to the optimum result. The extreme delicacy of some of the methods can best be appreciated in actual demonstration. The fact is, however, that in moderately favorable conditions it is difficult, after even a few days, to discern the line of organization.

Finally, it has been amply proved that the open wound condition should be reverted to just as soon as possible after the operation. The healing is quicker and better, the danger from infection less. Just as soon as may be, we dispense with the bandage and substitute the screened bed. Incidentally, it may be mentioned that the screen is very popular with patients, affording them a sense of semi-privacy by which they set great store. Treatments by real and artificial sunlight and other devices of light therapy are useful aids in presence of refractory conditions during the stage of after-treatment.

As to the bandage, in nasal operations such as have been described, the function assigned to it is to hold the parts in their new setting for 48 hours. By that time the processes of re-organization have been established, and the nose will maintain its position. The bandage can therefore be discarded, not to be renewed. Owing to the care exercised in separating the tissues in these procedures, and particularly in freeing the skin from the vessel-bearing tissues, there is so little ecchymosis that the patient can usually leave the hospital on the third or fourth day.

636 *Fifth Avenue.*

THE IMPORTANCE OF THE APPLICATION OF VITAMIN KNOWLEDGE DURING INFANCY AND CHILDHOOD.*

By W. AMBROSE McGEE, B. S., M. D., Richmond, Va.

The general practitioner and pediatrician of today owe much to the science of biochemistry for the progressive increase in good results in the feeding of infants and children. Without the excellent achievements in research by biochemists, the progress of successful nutrition would still be in its infancy.

The knowledge that the newborn need certain constituents in their food, namely, carbohydrates, fats, proteins, salts and water in their proper relation, has been known for more than two decades. However, even with the different types of food present in the diet, scientists realized that something was frequently lacking in order for an individual to take advantage of what he or she had ingested. This something that was known to be lacking may, for sake of illustration, be compared with the proper function of an automobile.

An automobile may have plenty of oil and gasoline in the proper places and a competent driver at the wheel, but without a properly timed spark, the motor will run improperly and in so doing it will not function for its good. It is universally known that sparks accurately regulated are needed to make use of the automobile food. Likewise, a child may have enough carbohydrate, fat, protein, salt and water even in a purified state and in a well balanced proportion and yet his metabolism will not function properly. The factor lacking may be likened to the automobile, and like it, this deficient something could be termed the spark needed for proper metabolism. Just as bread is spoken of as the "staff of life," the deficient substance could be termed the "spark of life" or the spark needed for body construction.

The vast amount of publicity concerning these deficient substances or vitamins, as they are now termed, has led to an eager desire by the public for concentrated vitamin-rich foods. This popular interest has led to a commercial exploitation and unfortunately much capital has been realized since vitamins are now in fad. No indiscriminate use should be made of vitamin knowledge, nor should vitamins be considered the chief cause of chronic malnutrition. We should only use them when indicated and wait for further research and time to determine their real place in nutrition.

For several years, three vitamins have been known of and have had an important position in the daily diets of different nations. These three vitamins are classified according to their solubility and they are designated by the first three letters of the English alphabet, namely, fat soluble A, water soluble B, and water soluble C. In more recent years (since 1922) two more vitamins have been added to

*Read before the Richmond Pediatric Society, December 2, 1926.

the list,—fat soluble D, and vitamin E or X.[1] The knowledge that there are definite vitamins, even though their chemical nature is not definitely known, has led the human race to begin to realize the necessity of a variety of food, and has solved many problems in nutrition which formerly were considered obscure or were unsolved.

After the discovery of America, sailors began taking long voyages, and the death rate among them rose to a large figure due to a condition in which there was hemorrhage and fragility of bones and hemorrhage of the gums. This disease was given the name of scurvy and was greatly feared by navigators. The diet of the sailors affected usually was abundant in salted meats and lacking in vegetables. Even as late as the World War this disease was prevalent among German naval men who spent months' preying upon Allied Nations' vessels. The last of the German raiders was forced to come ashore for fresh foods as they had developed scurvy. The high death rate among men taking long sea voyages led to much investigation by medical authorities to find the cause of scurvy. In 1536, Jacques Cartier[2] suspicioned something lacking in the ship's diet and, after losing a large number of his party from scurvy, saved the remainder by use of an infusion of pine needles. It was not until 1747 that orange and lemon juice were found to be specific for scurvy. This specific was discovered by James Lind,[3] a British Naval Surgeon, who also observed the beneficial effect of cows' milk in scurvy. Even though the use of orange and lemon juices has been known since Lind's time, there was a large death rate in the World War from scurvy due to the lack of knowledge of the dietary properties of foods among army and naval officers and mothers, especially among the latter in such countries as Russia and Armenia. Infantile scurvy was rarely mentioned before the use of artificial food, namely, cows' milk, in 1793, by Underwood.[4] Experimental work has shown that not all animals or fowls are subject to scurvy, for rats and pigeons appear immune even on a diet that is known to be scurvy producing in other animals.

Another condition well known among certain nations, particularly countries in which rice furnishes a major part of the diet, is a deficiency disease called beri-beri. Cuerva[5] (1923) says that as far back as 2600 B. C. the Chinese knew of this condition, and in the second century A. D. the Japanese described it as Kak-ki. Many theories have been advanced as to the etiology of beri-beri, but it was due to the untiring efforts of Eijkman,[6] at Batavia (Dutch East Indies), in 1889, that the large consumption of polished rice was the food responsible for the condition. He found beri-beri could be cured by adding silverskin (the pericarp and germ or embryo of rice) to white rice. In experimental work it has been found that rats and pigeons can be protected from beri-beri or cured of the disease by feeding them the concentrated urine of man or dog. Carnivorous animals, such as lions and tigers, do not get beri-beri for, after killing their prey, they eat its liver and kidneys which serve as sources of the something that prevents polyneuritis.

At present there seem to be two forms of beri-beri,[7] namely, the dry and wet types. In the former there usually is some emaciation, whereas, in the latter, dropsy is prominent, in fact so prominent that unfortunately that form is not sufficiently recognized from a standpoint of severity, for those affected are in imminent danger of immediate death. There is no kidney or heart disease and consequently the chemistry of the blood is negative. With the dry form there is an associated paralysis or polyneuritis and anorexia. The onset is rapid in wet beri-beri. Dry beri-beri seems to be due to a single deficient substance, namely, vitamin B, while the wet form appears to be due to a double deficiency, namely, vitamin B associated with a protein starvation. It is possible that maybe what is called and known as vitamin B might be more than one vitamin or that the vitamin responsible for wet beri-beri has not been definitely determined. Maybe the protein starvation is due to insufficiency of some of the eighteen or twenty amino acids (end products of protein digestion) rather than a real protein starvation. When certain of the amino acids are insufficient or absent[8] (e. g., tryptophane), maintenance of life is impossible, while, when others are insufficient or lacking (e. g., lysin), maintenance is allowed, but growth is not permitted. Wet beri-beri is known by several names, dropsical beri-beri and war or famine or nutritional edema.

It was much later that another condition—

xerophthalmia—was discovered to belong to the class of deficiency diseases. In 1857, Livingston,[9] during an exploration in Africa, described the hardships that his party endured while living on sugarless coffee, manioc roots and meal, and from exposure to the weather. He stated that the eyes of the party became affected. Spicer,[10] in 1892, stated that following measles or whooping cough with bronchitis, when there had been a serious exhaustion, there not infrequently occurred large corneal ulcers. He also mentioned spontaneous sloughing of the cornea among nurslings where mothers practiced long religious diets. To overcome this eye condition and the drying and hardening of the eyeballs in those children and also night blindness, Spicer fed a high nitrogenous diet and cod-liver oil.

The brief historical references of scurvy, beri-beri and xerophthalmia, illustrate the need of certain food substances which, when deficient or absent, give rise to severe or moderately severe conditions. These three substances, or vitamins A, B and C, have been mentioned before.

Since 1922 two additions have been made to the class of vitamins, namely, vitamin D and vitamin E or X,[1] both of which have been discovered to be of value; especially is this true of vitamin D. The conditions with which its absence or deficiency is concerned have been known for many years. The large number of infants and children, especially those of the temperate zone, who have had poorly developed bones and teeth have been mentioned repeatedly in old medical literature. The skeletal development of those affected is slow and imperfect and the bones bend and break easily. For this condition the name rickets has been selected (this being derived from an old English word—wrikken, meaning to bend or twist). Associated with the imperfect skeletal structure there usually is found abnormality in size and shape of the cranium, chest and abdomen; a delay or imperfect formation of teeth and a frequency of dental decay. Likewise, it has been long known that rachitic children stand respiratory infections poorly. Much investigation for the correction and prevention of rickets and its associated conditions has been done and in the past few years the importance of another vitamin, namely, fat soluble D, has been brought to light.

Very little information has been published concerning vitamin E or X,[1] but studies by Evans and Bishop seem to show that this unknown substance is essential for reproduction.

Each vitamin appears to have a more or less definite physiological action; fat soluble A is growth promoting and anti-xerophthalmic, and seems to stimulate digestion and absorption of fats; water soluble B is also growth promoting and in addition is antineuritic; water soluble C is antiscorbutic; fat soluble D is antirachitic; and vitamin E or X is concerned with reproduction. In many instances, while a diet may be lacking or deficient in a certain vitamin, there will arise certain conditions or symptoms which cause more or less chronic disturbances. If in these cases the trouble is recognized and the specific vitamin given, a correction of the trouble will result.

When there is a deficiency of vitamin A, the individual seems predisposed to respiratory infections ("colds," bronchitis, pneumonia, etc.), and growth is retarded or delayed, and in some instances there is an associated loss of weight. Too little vitamin B gives rise to digestive disturbances (anorexia, indigestion, constipation), debility, cardiac hypertrophy, and a slightly subnormal blood pressure. A continued insufficiency of vitamin B may give rise to colitis, appendicitis, or gastro-intestional ulcers, so Plimmer and Plimmer[11] advise. A shortage of vitamin C results in a sallow, muddy complexion, rheumatic like pains, headache, fatigue, irritability, and spongy painful gums. The mental attitude can well be illustrated by an occurrence in a large English preparatory school where Professor Hopkins[12] related an interesting story about the pupils in his school. It happened that his boys, who had been well behaved, became gradually irritable and listless and affected with other minor complaints. The cause was diligently sought, but could not be found. Careful examination of the boys and their surroundings revealed nothing and their food seemed adequate. However, it was soon discovered that the diet was lacking in uncooked foods and contained practically no greens. A near by store had closed just about the time the mental symptoms began, and this cut off the only source the boys had of obtaining any additional foods. The whole affair cleared up upon the addition of liberal

amounts of fresh fruits to the diet. The school apparently had been suffering from a mild form of scurvy. When vitamin D is inadequate in amount, the bones are poorly calcified (and consequently abnormality of shape is prominent), the teeth are softer than normal and have a tendency to decay easily, and the metabolism of calcium and phosphorus is thrown way out of balance, giving rise to tetany and allied spasmophilia tendencies as the result of the unbalanced calcium—phosphorus ratio. A shortage of vitamin E or X results in degenerative changes in the reproductive organs.

Fortunately, when there is a variety of food (even though the individual is grossly ignorant of the existence of vitamins) no ill effect from absence or insufficiency results because the great majority of natural foods contain an abundance or sufficient supply of vitamins. Some articles of our diet are known to contain more than one vitamin, while a few others contain two or more of these substances. While no one has yet been able to isolate a single vitamin or measure it quantitatively, experiments on rats, guinea pigs, birds, cows, and other animals, give a comparative value of the richness of the commoner foodstuffs in the different vitamins. In some instances, particularly with cod-liver oil, the vitamin-rich foodstuffs are assayed biologically, similarly to the manner in which the potency of digitalis is determined, namely, by the cat or frog method. The units of vitamin content are based upon the amount of the substance in question that is necessary to prevent signs of the vitamin deficiency in such animals as rats.

In a joint report of a committee from the Lister Institute and the Medical Research Committee,[12] the following approximate vitamin values were given. A 1 indicates a fair source of the vitamin in question, while 2 means a good source, and 3 an excellent one. Only a few of the foods are listed below, but these will give a fair idea of the vitamin content of the commoner articles of our diets.

Name of Food	Vitamin A	Vitamin B	Vitamin C
Butter	3		
Cream	2		
Cod-liver Oil	3		
Mutton Fat	2		
Lean Meat	1	1	
Liver	2	2	
Kidneys	2	1	
Fresh Fat	2		
Milk, whole cow's raw	2	1	1
Milk, condensed,	1	1	1?
sweetened	1	1	1?
Milk, dried	2	1	1
Milk, boiled	1?	1	1?
Milk, skimmed, raw		1	1
Cheese, whole milk	1		
Eggs, fresh	2	3	
Eggs, dried	2	3	
Wheat, maize, rice, whole grain	1	1	
Wheat, germ	2	3	
Wheat, maize, bran		2	
Vegetables:			
Cabbage, fresh, raw	2	1	3
Lettuce	2	1	
Spinach, dried	2	1	
Carrots, fresh, raw	1	1	1
Carrots, dried	1?		
Potatoes, raw	1	1	
Potatoes, cooked			1
Tomatoes, canned			2
Beans, fresh, raw			2
Fruits:			
Orange Juice			3
Lemon Juice			3
Bananas	1	1	
Nuts	1	2	
Miscellaneous:			
Yeast, dried		3	
Yeast, extract and autolyzed		3	
Malt Extract		1	

There is a close relation between vitamins A and D; whatever foods are rich in A are usually correspondingly plentiful in D. Foods containing vitamin E or X are cream, whole wheat grain, lettuce, meat and wheat germ oil, the latter being especially effective in relieving sterility.

While mentioning foods rich in vitamins, it might be well to name those in which none are found. This list is published by the same joint committee[13] that tabulated the vitamin-rich food. The following substances contain no vitamins:

Lard.
Olive, cottonmeal, cocoanut or linseed oils.
Coco butter.
Hardened fats, animal or vegetable in origin.
Margarin from vegetable fats or lard.
Cheese from skim milk.
Polished rice, white wheaten flour, pure corn-flour, etc.
Custard powders, egg substitutes, prepared from cereal products.
Pea-flour (kilned).
Meat extract.
Beer.

From the table of foods containing one or more vitamins, we can see that heating has some effect on the vitamin, as is illustrated by

condensed milk. In addition, the list reveals to us the importance of using butter rather than the usual butter substitutes. The difference in vitamin content between raw and cooked foods is well demonstrated by the list published by the joint committee referred to above. This brings up the question of stability of vitamins in regards to temperature, acidity, and alkalinity. Rosenau[14] sumarizes the effect of heat upon them as follows:

Stability	Fat Soluble A	Water Soluble B	Water Soluble C
To Temperature:	Stable at 100 C.; probably stable at 140 C.	Comparatively stable at 100 C.; slowly destroyed at 120 C. and above.	Gradually destroyed above 50 C.; rapidly destroyed above 80 C.
To Alkali:	Stable in cold, possibly in hot.	Slowly destroyed in cold, rapidly in hot.	Rapid destruction even in cold.
To Acids:	Probably stable.	Comparatively stable.	Comparatively stable below 50 C.

In heating foods, it appears to be the effect of oxidation rather than the heat which determines the resulting vitamin value of the food. Thus, heating foods without access to air (as tomatoes in a sealed can) for a few minutes apparently does not destroy the vitamin content. This has likewise been found true in heating milk, for it has been proven that it is better to boil milk without access to air for a few minutes rather than to pasteurize it at a lower temperature for a much longer period of time.

Besides the effect of temperature or acids or alkalis, one must consider the season in which the food is secured. It has been proven that summer grown cabbage is very rich in vitamin C, while winter cabbage is lacking in the same vitamin. Likewise, it has been demonstrated by Reyher[15] that changing infants from milk of cows fed on green fodder to milk from cows fed on dry fodder results in a cessation of gain in weight. This is also apparently the result of an absence or deficiency in vitamin C. Possibly this may be due to an insufficiency of sunlight (actinic rays) in winter as is seen in the case of rickets which is known to be more prevalent in the colder months.

Proprietary foods are often harmful since they may be lacking in one or all three of the common vitamins. Diets composed largely of fats, sugar and proteins, as is usually found among the richer classes, is usually deficient in vitamin B. The diet of the poorer classes is composed largely of starch, sugars and protein with a deficiency usually of all vitamins, especially B and C. Where there is an improper diet among adults, it is only natural that the childrens' diets will also be poor in vitamins.

The graphic representation of a "Square Meal," as presented by R. H. A. and Violet G. Plimmer[11] is an excellent practical method of presenting the idea of the importance of vitamins in the diet to the public. They place a circle in a square and designate the corners (outside of the circle) as the substances containing vitamins A, B, C and D (vitamin A and D are both included under A) and protein, while in the circle the diet is composed of carbohydrates, fats, salts and water. By means of this arrangement they cleverly illustrate and state what happens when one or more vitamins are deficient or absent and when the diet is excessive in fats or carbohydrates.

Nature, realizing that the diets of infants and young children are composed largely of milk, incorporated all five vitamins in this almost perfect food. Since so many cows have been found to have tuberculosis, pasteurization of cows' milk has become very common. As mentioned above, oxidation of vitamins (especially vitamin C in case of milk) tends to destroy them, whereas boiling (in a vessel away from air) for a few minutes does not effect the whole cows' milk. It thus seems reasonable to boil cows' milk rather than to pasteurize it. Powdered milk seems to compare favorably from the standpoint of vitamins (and also from food viewpoint, namely, breaking of fat globules and preventing large tough curds) with boiled milk. Since milk is known to contain only a small quantity of vitamin C, it is wise to add this before the onset of scurvy (six months or older). Vitamin C can be given with advantage to an artificially fed child as well as one nourished by its mother as early as the first month. The foods of choice that are rich in that

vitamin are orange, lemon and tomato juices. In case these are not obtainable or tolerated, spinach, carrots (raw) and cabbage (summer) juices may be substituted.[16] It is on account of these juices that scurvy is now almost rare among infants and young children.

Inasmuch as rickets is so prevalent, it is wise to give an infant vitamin D at an early date, for rickets appears much earlier than was formerly believed; especially is this true among prematures, Italians and Negroes. This substance can be abundantly supplied by means of pure unadulterated standardized cod-liver oil as manufactured by large reputable firms. Cod-liver oil is rich in vitamin A as well as D, and, in addition to preventing rickets, promotes growth and prevents carious teeth. In addition, research by Cramer, Drew and Mottram[17] (1922) showed vitamin A increased the number of platlets in the circulation. A deficiency or absence of that vitamin (A) gave rise to a thrombopenia. It is possible that maybe circulatory disturbances due to low platlet count (e. g., purpura) may be benefited by vitamin A, and the early use may serve as a prophalaxis against thrombopenia. Associated with rickets are respiratory infections, and since cod-liver oil is antagonistic to both conditions, it seems plausible that it would lower the incidence of respiratory infections if begun early. At present the oil is advantageously begun when the infant is only a few days old; this is especially true for prematures, Negroes and Italians. The cod-liver oil is started with only one drop three times daily, and then gradually increased one or two drops a day till one-half to a whole teaspoonful is reached; then the dose is not increased further. Infants and young children fed the oil have excellent type of teeth and enamel and cavities are infrequent. From the use of cod-liver oil the close relation between vitamin A and D is observed. The latter regulates calcium and phosphorus metabolism, and it is in this way that normal bones and good teeth result. Of course, to regulate the calcium and phosphorus metabolism we must select food rich in calcium (e. g., milk, cabbage, carrots) and phosphorus (e. g., egg yolk, fish).

A diet rich in vitamin B is highly desired, for the substance seems to be associated with an increase in appetite and, if absent, appears to result in lymphatic atrophy, as shown by Cramer, Drew and Mottram,[17] in 1921. These men found that hypothrepsia and athrepsia were associated with an absence of vitamin B. Thus, when we meet with subnormal infants and children, it would be worth while to feed them foods rich in that vitamin and then observe the effects on the malnutrition as well as their appetite. It is unfortunate that people in this country consume so small a quantity of whole wheat flour and other whole grain products, for these foods along with eggs, peas, and yeast are the richest source of vitamin B. The use of whole grain products and natural simple foods are of distinct advantage,[11] as has been observed among races whose diets consist of such types of food, for those people are practically free from the disorders associated with a shortage of vitamin B, namely, digestive disturbances.

Among nurslings who are not progressing favorably, we should diligently inquire into their mothers' diets, for it is possible and probable that she is getting insufficient vitamins. If such be the case, an addition of these substances will not only improve her physical and mental condition, but also that of her child. The mother should always have an ample supply of green and leafy vegetables, whole grain cereals, and dairy supplies. It might be that an inquiry into the infant's or child's diet may reveal an insufficiency of vitamins and by feeding those lacking, we will soon see a decided improvement. This is often seen when an infant who has been fed for a long while on skimmed milk is given cream (whole milk) or cod-liver oil, for the addition of the cream or oil serves as a source of vitamin A and there is a rapid gain in weight and a general improvement.

Closely allied with deficiency diseases are two conditions which appear to belong to that classification. These conditions are pellegra and celiac disease; the former is rather uncommon among children, whereas, the latter is much commoner during childhood. Celiac disease is known by a number of different names, the commoner ones being, chronic intestinal indigestion, chronic fat intolerance, intestinal infantilism, intestinal atrophy with dilatation, intestinal insufficiency, and pancreatic infantilism.

Pellegra has been cited in older literature and the majority of cases in which nursing mothers have suffered with the disease show

a small incidence among their infants. Analysis of human milk in those having pellegra does not show any toxic substance. As a rule, the mothers' diet is poor in protein and vitamins and comparatively rich in carbohydrates and fats. By means of a diet rich in fresh vegetables, meats, eggs, milks and whole grain products, Goldberger[18] (1914) was able to prevent or cure pellegra. In its intestinal symptoms (diarrhea, enteritis, ulceration and hemorrhage) pellegra is analogous to scurvy. Likewise, there is a similarity between pellegra and beri-beri in the lesions of the nervous system (Roberts,[19] 1912), namely, a scattered degeneration of the motor cells in the spinal cord. Whether the good results in treating pellegra are due to the freshness of the meats, milk or vegetables or to the increased protein consumption is unsettled, but the close relation it bears to scurvy and beri-beri leads one to believe that there might be a vitamin deficiency—possibly B or C, or a combination of the two vitamins. Then it is also possible that it may later be proven to be due to a deficiency in the eighteen or twenty known amino acids (end products of protein digestion) or to an inability of the individual's intestines to absorb or assimilate the amino acids.

The other possible deficiency disorder, celiac disease, has not been properly understood until in the past few years, and even now just why cases respond to certain routine is not definitely known. It appears to be absent in infants nursed by their mothers and when present in those fed upon cows' milk, celiac disease begins after six months—the time when the milk diet is usually supplemented by other foods, particularly carbohydrates. The fact that cases of celiac disease respond to protein therapy suggests similarity to pellegra, while good results following feeding with bananas[20] make it appear as if there is some unknown vitamin present in that fruit, and since it is known to contain only vitamin A and B, maybe it is one or both of them that are lacking or deficient. It is also possible that a sixth and unknown vitamin is the causative factor, and in keeping with the letters of the English alphabet it could be referred to as vitamin F. In Vancouver,[21] Canada, research work is being done to see if there is not some similarity between diabetes mellitus and celiac disease. Results thus far seem to indicate that the latter condition responds favorably to insulin injections. While no doubt very hypothetical, one cannot help being carried on by his imagination in wondering if, in addition to its effect on carbohydrate metabolism, insulin has any vitamin properties or, if vitamins act in any manner similar to products of internal secretion. The fact that diabetics are unable to take care of the carbohydrates in the body (like a normal person can do) and that celiac disease usually responds fatally to a continuation of a high carbohydrate and low protein diet, seems to suggest a possible similarity between the two conditions. Perhaps vitamin enthusiasm has led us far astray; then, on the other hand, maybe we have an additional clue for further investigation.

Summary and Comment.

The introduction of vitamins into nutrition has served as a stimulus to further research work in foods, and the science of nutrition has thereby been placed on a higher scientific basis. The recognition of conditions due to a lack or deficiency of one or more of the known vitamins is often spectacular after applying the therapeutic test. It is now clearly seen that even though the diet contains a sufficient quantity of carybohydrates, fats, proteins, salts and water, nutrition will not progress favorably for the individual. Fortunately, the commoner foodstuffs contain a sufficient supply of vitamins to prevent deficiency disturbances, but among infants and young children where there is not much variety, the application of vitamin knowledge is essential for a better race.

Each vitamin has a proper place and an excess of one does not make up for a deficiency of another. The education of the public by simple tables or illustrations, as the square meal by the Plimmers,[11] and a variation in size and health of animals and people deprived of vitamins will educate them sufficiently to choose proper food and will serve to defeat the commercialization of vitamin rich food for sake of capital. Mothers should be told why different substances, such as orange or tomato juice, cod-liver oil, fresh green vegetables, etc., are added to the diet, for, knowing the reason, they will probably be more careful in selecting their foods. Vitamin knowledge has taught us the necessity of se-

lecting a variation in our diets. Conditions such as pellagra and celiac disease make one appreciate the use of fresh foods and diets containing all of the amino acids. The practical use of each vitamin is important for, without vitamins A and B, growth is retarded; without B, polyneuritis results; absence of C is followed by scurvy; a deprivation of D gives rise to rickets and poorly developed and carious teeth; and absence of E results in sterility or degenerative changes in the reproductive organs. Research and practical experience with vitamin D has brought to our attention the fallacy of thinking oral hygiene alone will result in better teeth and less decay. Vitamin knowledge has shown that this will only result from use of vitamin D, but the use of that vitamin with a liberal supply of calcium and phosphorus in their proper relations, and oral hygiene is a more ideal combination for the advancement of better teeth and less decay. Instead of appropriating large sums of money to correct dental caries, why not invest it for a more rational use, namely, to educate the public concerning the application of vitamin knowledge and to promote further research? Vitamins bear the same relation to the known deficiency diseases, as diphtheria and tetanus antitoxins do to diphtheria and tetanus, respectively.

From the newer knowledge of vitamins, we learn that respiratory infections may be decreased and night blindness cured by the use of vitamin A; that appetite and increase of lymphocytes results from the employment of vitamin B; that irritability may be lessened when vitamin C is present; and that better formed bones and teeth and less caries follow the use of vitamin D. The old idea that if we let our appetite be our guide in the selection of food is now realized to be erroneous, for when human beings are left to select their own diets, such factors as price, attractiveness, taste, length of time to prepare, etc., are considered rather than the real value of the foods. Experience with children as well as adults has shown that if we eat everything that appeals to us, soon nothing will tempt our appetite.

When a man decides to have a home built, he does not select his own materials with which to construct his house,—that he leaves to an expert. The human body needs materials to build it and keep it working to the best advantage, but usually no expert is employed to select the articles of food that should be eaten. Likewise, the employment of energy quotient or calories or percentage feeding is not all that is needed to constitute a balanced diet; these agencies of computing theoretical body needs should be used in conjunction with other factors, as to whether or not there is an ample supply of natural simple foods or fresh vegetables or dairy products or of vitamins. The tendency to using the majority of grains in their unnatural state is regrettable; especially is this true in the use of white flour in place of whole wheat. Grains are one of our chief sources of vitamin B, but after the products are refined or polished, this virtue is lost. Then there is danger in a faddist diet, as that of a vegetarian, for he cannot consume properly balanced foods unless a large quantity of leafy vegetables are ingested daily, and this is not the rule with vegetarians.

A knowledge of the proper constituents of foods is necessary for a better race, and if the knowledge is applied before an infant is born, his chances of living are much greater, and, in turn, the mother is better equipped to care for her child. The young child's diet is controlled in a great measure by that of his parents, and if they eat a monotonous diet, the chances are great that he or she will consume a similar diet.

Infants and children are more concerned than adults about the proper foods and vitamins,[22] for they are more likely to suffer, since, during that stage of life, human begins are more susceptible to adverse conditions and since growth is so important during the earlier years of life. Besides, infants and young children necessarily have a limited number of foods to select from; so it is all the more important that their diet should be properly balanced, especially with reference to all of the amino acids and vitamins.

The information gained from the study of vitamins points to us the great advantage that lies in fresh milk, meat, and vegetables, and fruits, and whole grain cereals, especially when these foods are in their natural state. If the daily diet contains these substances in adequate amounts, we are in no danger of disease or disturbances from lack or deficiency of vitamins. The one indispensable food is milk, for it is this food that contains some of all

five vitamins, and investigations, by McCollum and Simmonds,[7] have shown that countries consuming large daily quantities of milk (pint to a quart) and its dairy products are the strongest races both intellectually and physically.

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AN OUTLINE OF PRESENT-DAY TREATMENT OF TUBERCULOSIS.*

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"The Treatment of Tuberculosis" is a big subject, and to deal with every aspect of it would require too much time and an undue indulgence of your patience. Only a brief outline will be presented here.

The treatment of symptoms and complications will, therefore, be omitted and only the pulmonary form of the disease be considered in a general way. We often think the diagnosis is hard, but in most instances the real difficulty comes with the frank talk with the patient which must inevitably follow the examination. The patient wants to know, and justly so, what his or her chances are for recovery; how long it will take; how much it will cost; and whether he should seek some other climate or cast his lot in the home state. The question of time is the first "bitter pill" to be swallowed by the patient. He must be told frankly in the beginning that there is no "get-well-quick" road in tuberculosis, and that there is no choice of speed in the process of recovery. If the treatment is to be conducted to a successful termination, it must of necessity be over a long period of time. This disease differs from those which are more acute in their course, and a clear understanding must be established in the beginning between physician, nurse and patient. Tuberculosis is, in most instances, a chronic disease, characterized by alternating periods of quiescence and exacerbations; and often just when the patient thinks he has about recovered, there will come a relapse which is demoralizing, and will shake the faith of the most stable individual. Under such conditions, to stimulate the reserve vim and will power is not an easy matter. It may be safely said that at least 75 per cent of the treatment of tuberculosis depends upon the patient. This being the case, the patient must be impressed in the very beginning with the importance of will power and determination; earnestness of purpose; cheerfulness and patience; intelligence and interest. Surely none of these are so difficult of understanding or accomplishment that they cannot be carried out by any patient who is anxious to recover.

The three most important principles in treating tuberculosis of the lungs are:

First.—The steps necessary to be taken for the most rapid and the most economical recovery from the disease.

Second.—A thorough knowledge of the disease which includes a knowledge how to stay well after recovery, and how to avoid the things responsible for relapse.

*Read before the Conference of Virginia Public Health Workers in session at Richmond, February 14-19, 1927.

Third.—Education in the prevention of the spread of the disease.

When the patient understands that his infection is the direct result of carelessness on the part of someone suffering from the disease, he will usually gladly welcome instructions tending to prevent further transmission. Too much emphasis cannot be placed on the necessity of covering the mouth and nose with a gauze handkerchief when coughing and sneezing, and of expectorating only in a sputum cup.

After explaining to the patient the extent and character of his disease, and looking after the psychological aspect, as mentioned above, there comes the duty of dealing with the fundamental and long considered cardinal factors in treating this disease. They are rest, good food, and fresh air. Whether the treatment is conducted in the home or in a sanatorium, the importance and ultimate results are the same, if the patient is earnest, determined and co-operative in his efforts. All three of these factors are important, but the first two seem to have the greatest significance. Let us consider them in order:

Rest

Rest, and by this is meant both physical and mental relaxation, is by far the most important factor in the treatment of tuberculosis. The patient must feel this importance in the beginning. The body is overwhelmed with tuberculous toxins; constitutional impairment has taken place; and if recovery is going to be brought about, there must be rest and all that goes with it. The patient who habitually insists that he can keep going and refuses to rest, will never regain health. It is a generally accepted fact today that, regardless of how slight the lesion, and how few the symptoms, the patient with tuberculosis has a greater chance for recovery if put strictly to bed for a period of from three to four months. Symptoms have in the past governed, to a great extent, the amount of time the patient has to spend in bed. Unless he runs a fever of 100, a pulse rate of 100 or over, or is spitting blood, he is generally permitted to get up and go to meals, and perhaps take exercise. It is the standing order at Blue Ridge Sanatorium that any patient with a maximum temperature of 99.6, or a pulse rate of 90 or over, must be in to all meals, but if carrying a temperature of 100, he must be made a bed patient. We have, however, some patients who have no fever but who are required to remain strictly in bed because of the type of lesion they have. We have found that the exudative type and caseous-broncho-pneumonic forms of the disease, seen mostly in young adults, will, if the patient be kept in bed, often undergo resolution and absorption, with good recovery. On the other hand, the chronic fibro-caseous types, usually seen in people past middle age, have fewer symptoms, are not so sick, and will get a fair repair without so much time spent in bed. We may infer from this that not only symptoms, but extent and type of pulmonary disease must be known for the patient to be successfully treated. The case that has had marked symptoms and extensive pathology should, we believe, have several weeks complete rest in bed, even after all symptoms have disappeared and there is a feeling of well being on the part of the patient. It must be remembered that the tissues of the body have undergone much impairment by the circulating toxins; and even after the clinical course has abated, more time is required for their reaction to normalcy if relapse is to be avoided.

Diet

The period of "stuffing" raw eggs, pure cream and cod-liver oil has fortunately passed in the treatment of tuberculosis. This kind of feeding was found to be harmful, and more moderate measures are now employed. The main object is to get the patient a few pounds above the standard weight. It is not necessary to get excessively fat to recover from this disease. Some of our best results are accomplished in cases that have gained only a small amount of weight. There has been much dispute over the articles of food to be included in the diet of tuberculous patients. It was first thought a diet high in protein was necessary in treating tuberculosis to replace tissue destroyed by the disease. The theory was that much protein in the diet stimulated the formation of scar tissue, and in this way walled off the diseased areas. We now know this idea to be incorrect, because the best way for tuberculosis to heal is not by the formation of scar tissue, or calcification; but by resolution and absorption, with a complete disappearance of the diseased foci. Thirty to forty grams of protein in the diet, according to Kellogg, is sufficient for body needs in the average case; and any excess above this amount has to be

eliminated by the kidneys, thereby overtaxing these organs, which are already being over worked by assisting with the elimination of the tuberculous toxins. Autopsies performed at the Phipps Institute, Philalephia, on people who died of pulmonary tuberculosis, show more than 80 per cent had kidney impairment. Animal proteins are more irritating than vegetable proteins, and it is considered advisable for the average tuberculous patient to eat meat only once daily. Carbohydrates produce heat and energy, are relatively easily digested, and are the body's greatest resource in replacing lost weight. Therefore, it would seem advisable that the bulk of the diet should consist of this type of food. Fats, if taken in excess, irritate the mucous membrane of the stomach and retard digestion. Fats, however, in emulsified form, such as in milk and egg yolk are most easily handled. Fruits should be given in abundance since they require little digestion, and the nutrient portion consists of simple sugars. One of the chief objects in treating tuberculosis is the elimination of toxins, and a diet must consist of foods which stimulate peristalsis of the intestines to the extent of producing at least two bowel movements daily. Since fruit juices have a laxative effect, fruits will be of much assistance in this respect. Vegetables, high in cellulose, also help to overcome constipation by giving bulk to the alimentary canal. Mineral matter and the essential vitamines are taken into the body in most all the foods; the green leafy vegetables, milk, fruits and eggs probably heading the list. With the average patient one quart of milk daily is sufficient, and this is best given either with the meals or immediately afterwards. Eggs may be included in the diet, according to the patient's desires, but should not be given raw or between meals. On the whole, then, I would say that the diet should consist of staple foods, not so rich as to be indigestible, and they should be as varied as possible, well cooked, and attractively served.

Fresh Air

In conjunction with rest and diet, fresh air, both day and night, is absolutely essential. The progress of tuberculosis is aided by insufficient ventilation, and, conversely, is interfered with by an abundance of "outdoors". The principal effects of fresh air are to tone up the body by its stimulating effect on the skin, and to supply the blood in the lungs with the necessary amount of oxygen to be carried throughout the body. Through its stimulating effects, metabolism is improved, and there is a greater elimination of toxins. Weather conditions will, of course, have to be taken into account. Warm sleeping garments for winter are necessary, and external heat in the form of hot water bottles and stone "pigs" may have to be used for comfort.

These are the important points in the care of tuberculous patients for the physician and nurse to observe, and have stood the test of time. Others worthy of mention have value as a correlation and must be used in selected cases. They are pneumothorax, heliotherapy, surgical collapse and tuberculin therapy.

Pneumothorax

Pneumothorax, or lung compression, was used as far back as 1825, but it was not until about twenty years ago that its use became more common and its value recognized. Today almost all tuberculosis institutions are using it to advantage. The principle is sound, the technique simple, and procedure relatively safe in the hands of those experienced in the use of it. Physiological rest of the diseased lung by the compression and consequent reduction of absorption of toxic materials are the chief attainments to be desired. It may be safely said that the majority of consumptives who die have at some time been suitable for lung collapse, and could have been benefited by this treatment. Much judgment must be exercised in the selection of cases for pneumothorax or its use will fall into disrepute. The patient should be placed in a hospital or sanatorium during the period that the lung is being collapsed.

Collapse is indicated when the disease is confined mostly to one lung and no material improvement has been made after a trial by the usual measures of routine treatment as outlined above; it is also indicated for the control of pulmonary hemorrhage, and for certain tuberculous complications, such as tuberculosis of the throat. Any type of the disease may, of course, be collapsed, but in the hands of the most experienced men, the chronic-fibroid seems to be the best to select.

Recent advances in X-ray technique have enlarged the scope of this work. The study of stereoscopic films helps to determine definitely the condition of the opposite lung, and in locating the most probable area of free pleural

space on the side considered for collapse. The fluoroscopic screen is an invaluable aid in determining the extent of the collapse, and any displacement of the mediastinal structures which may take place from pressure.

For the past two or three years we have averaged giving 10 per cent of our patients at Blue Ridge this treatment. Our work recently reviewed and tabulated shows 87 per cent of the cases attempted were successfully collapsed. Pleural adhesions, or lack of free pleural space was responsible for failure in the remaining 13 per cent. Of the sixty-six cases successfully collapsed, forty-six, or 73 per cent, were definitely benefited. The remaining 27 per cent were not improved, and the treatment had to be discontinued due to extension of disease in the opposite lung. Seventeen cases in this group were given pneumonthorax for the control of hemorrhage, all of which were successful. So it will be seen that this form of treatment is of decided value, and bids fair to have a greater success in the future.

Thoracoplasty

Thoracoplasty is of recent development, and has as its principle the same as that of pneumothorax, namely, the collapse of the lung. The operation consists of sectioning the ribs near the vertebral column, and when the cut ends are brought together by pressure, the lung is collapsed. The complete operation is done in two or three stages according to indications for it and the condition of the patient. It is a substitute for pneumothorax, and is used only when the latter has proved impossible or a failure. Thoracoplasty is less desirable, because once the operation has been performed, the lung is permanently collapsed, and there is no future hope for expansion. In pneumothorax, if there is an extension of disease in the opposite lung, the refills may be discontinued and the lung allowed to expand. Some patients, however, detest the idea of the needle, or do not want to stay in the Sanatorium, where this treatment is best given. Under such conditions, thoracoplasty may be the choice operation. Once the lung is surgically collapsed, the patient may return home and continue the usual treatment there. To date, five of our patients have had this operation at the University of Virginia Hospital. Four were markedly benefited, three of which have returned home and are working. The fifth has improved but continues treatment in the Sanatorium.

Section of the phrenic nerve, or phrenicotomy, as it is called, is of great assistance in both pneumothorax and thoracoplasty. It will be recalled that the chief muscle of respiration is the diaphragm, and that it derives its nerve supply from the phrenic. When this nerve is sectioned on one side, the diaphragm becomes paralyzed, elevated, and fixed on that side. By rising in the thorax two or three inches, pressure is exerted on the base of the lung, and the disease tissue in that portion may be collapsed. Basal lesions are helped in this way. Of the above mentioned cases of thoracoplasty, one had a phrenicotomy preliminary to lung collapse.

Heliotherapy

No discussion of the treatment of tuberculosis today is complete without the consideration of sunlight. Rollier, in Switzerland, who is the father of sunlight treatment, has for more than twenty years been treating bone, joint, and glandular tuberculosis with success. He reasons that if it helps these forms of tuberculosis, it must be equally as good for the pulmonary type. He has many followers in this country, LoGrosso, of Perrysburg, N. Y., probably being the foremost.

By graduated exposures of the naked body to the sun's rays, the skin gradually takes on a bronze hue. Following this, there comes a copper color, and, finally, a chocolate brown. This is called pigmentation, and the intensity of pigmentation usually governs the final results of treatment. Little or no results are noted until pigmentation, or tanning, has taken place. The results are in the form of an increase in the red blood cells and hemoglobin content, metabolism is increased, the patient rapidly takes on weight, and the symptoms gradually disappear. The mental attitude of the patient changes from depression to cheerfulness and animation. Any tuberculous process, whether located in the lungs or elsewhere, has constitutional manifestation, and any successful treatment must be general as well as local. Solar treatment has both qualities. The quartz light, while deficient in the solar spectrum, is a fairly good substitute and is much employed today. At the Sanatorium we have six Alpine lamps, which are constantly in use. For the past two years 191 patients have been treated, and 71.4 per cent of these were

benefited. Our children get the sunlight treatment, which we feel is more beneficial. Arrangements are now being made for the adult patients to get it too.

Chemotherapy

Chemotherapy deserves only brief mention. No drug has been found to be of definite value in treating tuberculosis. Chaulmoogra oil was hailed five years ago as a specific. It was found to cure incipient leprosy and thought to dissolve the waxy capsule of the tubercle bacillus, and in this way give the resisting forces of the body a chance to destroy it. It proved to be of no value. Nowland, in Pennsylvania, only a few years ago fattened his purse by announcing through the daily press a cure for tuberculosis. It consisted of inhalation by the Nowland nebulizer of finely powdered carbon, which was supposed to settle around the diseased areas in the lungs and calcify them. It, like Chaulmoogra oil, was of no value, and enjoyed only a brief stay. Recently we have been much concerned by the announcement from Professor Moellgaardt, of Denmark, that he had a cure for tuberculosis in the form of a gold salt—sanocrysin. This, coming from a man of some ability, and apparently worked out along scientific lines with experimental animals, raised the hopes of many. However, the best investigators in this country and Europe cannot duplicate his work, and there is every indication now that it must go the route that all others in this class have gone.

Tuberculin Therapy

In 1895 when Koch discovered tuberculin, it was thought to be a sure cure for tuberculosis and that the battle had been won. People afflicted with the disease rushed forward and received massive doses of tuberculin subcutaneously. There was produced by this severe inflammatory changes at the site of the lesion in the lungs, the body was overwhelmed with toxins, and a severe reaction took place. The outcome to many was fatal. The dose was then reduced and more judgment exercised in selecting the cases, and it did seem to have some value in producing tolerance to the toxins through stimulation of the body's juices. Today it is not used much, especially in the pulmonary cases, because of the violent reaction it may cause. Even in the hands of experienced men, no one can tell when a severe reaction may come. Biologically, the principle is sound, and it is believed that some day a better therapeutic application will be made. Extensive research is now being conducted on the chemistry of the tubercle and the tubercle bacillus, but until we know something of the body's mechanism of response to the infection, that is the immunology, there is little chance of a specific.

Calmette has opened a new field by the vaccination of new-born infants against tuberculosis. He uses a culture of living bovine tubercle bacilli, which have been grown in pure ox bile mixed with glycerine. It has been carried through 230 successive cultures, and grown over a period of thirteen years. Three doses, each of 400,000,000 bacilli, are given the infant by mouth in a teaspoonful of milk on the 3rd, 5th and 7th successive days after birth. This work was started in July, 1921, and up to May, 1926, 476 infants had been vaccinated in Charity Hospital, Paris. These infants were vaccinated in two groups, the first consisting of 120, of whom eighty could be located in 1926 and proved to be in good health. Of the 356 remaining, 145 continued under their supervision. Of these, twenty-one are dead, showing the rate of 1.7 per 100 of those who were born and lived in contaminating surroundings, while there are no deaths from those vaccinated who were born and lived in uncontaminated surroundings. Statistics show the mortality of infants of the same age in France, Belgium, Great Britain and Sweden not vaccinated, born and reared, exposed to infection, to be 25 per 100, or one-fourth. Calmette, therefore, concludes that vaccination with his culture protects the lives of 99 per 100 of contact cases. It is, of course, too soon to say just what the outcome of this work is going to be. These vaccinated cases will have to be watched over a period of a generation to determine how much immunity has been conferred.

Thus you will see that tuberculosis is being attacked from every available angle. Some modes of treatment are on a firm basis and of undisputed value, while others are still in the experimental stage. The future holds greater achievements through the research route, and it is believed that the time is not far distant when a definite and specific cure will be discovered.

THE SURGICAL DIAGNOSIS AND TREATMENT OF THE DYSPEPSIAS.*

By EDMUND HORGAN, M. D., F. A. C. S., Washington, D. C.

Thirty and more different conditions or diseases cause dyspepsia. The commonest of these are gastric ulcer, gastric carcinoma, duodenal ulcer, cholecystitis and chronic appendicitis.

Etiology.

The cause of these common forms of dyspepsia has not been conclusively established; but the work of Rosenow in reproducing some of these diseases in laboratory animals from pus obtained from foci of infection in patients suffering from them, has given us the most logical explanation of the cause. The cause of carcinoma of the stomach is as little known as the cause of carcinoma elsewhere.

Age.—These common forms of dyspepsia occur in all decades of life. Gastric ulcer is found most often during the fourth and fifth decades; gastric carcinoma is most frequently found beyond middle life, occasionally, in the young adult; duodenal ulcer, frequently before, but mostly during and after the third decade; cholecystitis most often beyond the third decade. Chronic appendicitis occurs at all ages.

Gastric Ulcer.

Chronic gastric ulcer is also known as "peptic ulcer." The patient usually gives a history of spells of "stomach trouble" over a long period of time. The spells last from a few weeks to a few months. As a rule there is no periodicity in their occurrence, but occasionally they are seasonal, coming in the spring and fall. The period between spells is characterized by freedom from pain and relative freedom from other symptoms. The chief symptom during a spell is pain coming one to one and a half hours after meals. The pain may be relieved by alkalies, and sometimes by food. If untreated, it persists for an hour or two, usually subsiding before the next meal. A heavy meal of course food will be followed by longer and more severe pain than is occasioned by light eating and bland food. The character of the pain may be described by the patient as "boring," "burning," "aching" or "gnawing." The location of the pain is in the epigastrium. During the time of pain the patient complains of marked weakness and lassitude. Sour eructations are common, and nausea is occasional. Vomiting rarely occurs unless there is an obstruction in the stomach, in which case it is frequent. Hemorrhage occurs in over 25% of the cases, and where it does occur the loss of blood may be great enough to produce an acute anemia and even death. Patients often give a history of loss of weight, or a general decline from the beginning of the trouble.

Physical examination of the patient does not reveal anything decidedly characteristic of gastric ulcer, but a tenderness high in the epigastrium is found quite frequently. In gastric ulcer the acid values are usually high, but they may be low, in which case they suggest the possibility of a malignant change in the ulcer. The chief aid in diagnosing gastric ulcer is an X-ray study.

Gastric Carcinoma.

Carcinoma of the stomach is one of the most frequent causes of marked gastric distress, and next to the uterus the stomach is the most common location of cancer in the body. Patients having carcinoma of the stomach may give either a history of marked digestive disturbance over a period of several months with no antecedent history of dyspepsia, or a history of dyspepsia off and on over a period of years with a marked increase of the symptoms over a period of months. With the onset of the digestive disturbance there is a loss of appetite, and a loss of strength and weight, which gradually increases, as the disease progresses. There is usually gas, belching and the regurgitation of small quantities of food and sour or foul-tasting fluid. Whatever form of distress the patient may have, it is most persistent, and relief or comfort cannot be obtained from food, alkalies, irrigation or vomiting. The failure to obtain relief by these methods alone should be suggestive of carcinoma. The patient has a marked pallor at first, which late in the disease changes to a yellowish tinge characteristic of cachexia. There is an anemia without visible hemorrhage. Hemorrhage occurs in only about 10% of the cases, but there is a steady loss of small amounts of blood which is altered by the gastric juice and which makes the "coffee grounds" vomit characteristic of this disease.

On physical examination a palpable mass in the epigastrium is present in over 75% of the cases. Examination of the stomach contents

*Presented before the Medical Society of Maryland, Virginia and the District of Columbia on November 10, 1926.

reveals altered blood, food particles, low free HCl and total acids or the absence of free HCl and low total acids. X-ray study is the most accurate single method we have of diagnosing gastric carcinoma.

Duodenal Ulcer.

The patient with duodenal ulcer complains of "stomach trouble" coming in spells usually in the spring and fall, lasting from a few weeks to a few months, and alternating with periods of complete freedom from symptoms. During the spell the patient has pain which comes from one to five hours after meals, and lasts until the next meal or until relieved by food or alkalies, or even by vomiting. Pain recurs at the same time after each meal each day. Gastric distress during the night is frequent, recurring regularly at the same hour. It can be relieved by crackers and milk or soda, and the patient soon learns to keep his particular remedy at his bedside.

Occasionally there is some gas and a sensation of fulness in the epigastrium during the time of pain. It may be accompanied by sour eructations. Nausea and vomiting sometimes occur. Bleeding occurs in 20% of the cases of duodenal ulcer. The hemorrhage is rarely fatal but is often serious.

There is usually a history of gradual loss of weight from the time of onset, but occasionally there is noted an increase if the patient has had dietary treatment. To physical examination there is no distinguishing sign for duodenal ulcer. Tenderness in the epigastrium may be found in some cases during a spell. Chemical examination usually shows hyperacidity in cases of duodenal ulcer; but this is not a sufficiently constant sign to be depended upon in any single case or in any single analysis. X-ray, especially in the hands of experts, is a most reliable aid in locating the ulcer and confirming the clinical diagnosis.

Cholecystitis.

Chronic cholecystitis is a very common cause of dyspepsia occuring in mild and severe forms. The mild forms may be difficult to diagnose, but the severe forms have a well marked train of symptoms. The patient usually describes the spell as coming on after taking food that disagrees, after an indiscretion in diet, or as due to constipation. The chief symptom is gas, with belching, bloating of the abdomen and fulness in the epigastrium and lower part of the chest. The distress is caused by the taking of food and may come on during the meal, but usually comes shortly after. Certain foods cause "repeating," and certain foods cause distress; the avoidance of these will allow the patient to be comparatively free from trouble. Intolerance for pork, sometimes lamb and veal, cabbage, onions, radishes, raw apples, bananas, etc., is most characteristic of this disease. Relief is usually obtained by belching. Vomiting occurs at times and most often gives relief. Some patients learn this and will induce vomiting. Soda or food usually does not give relief. The patient with cholecystitis is, in most cases, well nourished, has a good appetite and indulges it until discomfort forces him to a rigid diet.

Tenderness in the region of the gall-bladder and along the lower border of the liver may be found on physical examination, but is not always present. The visualization of the gall-bladder by means of the X-ray following the oral administration or the intravenous injection of sodium tetraiodo-phenolphthalein, as suggested by Graham, Cole and Copher, is giving us valuable aid in diagnosing or excluding chronic cholecystitis and cholelithiasis.

Symptoms of cholelithiasis are the same as in cholecystitis, with a history of one or more attacks of gall-stone colic, which may or may not be followed by jaundice. The attacks of colic are characterized by a sudden severe pain coming in the epigastrium and going through to the back and radiating to the right shoulder. The duration is from a few minutes to a few hours and the subsiding of the pain is almost as sudden as the onset. Following the attack there is tenderness if the gall-bladder is distended and there is soreness of the muscles in the epigastrium from contraction during colic.

Chronic Appendicitis.

Chronic appendicitis may mimic any or all of the varieties of chronic dyspepsia. The distress is usually epigastric, with nausea, bloating, regurgitation, etc. Epigastric discomfort may be more or less continuous, or may come in spells. Attacks of pain or discomfort occur very irregularly with regard to meals, time of day, etc.

Clinical laboratory and rontgenological studies have not developed tests or methods that are of much aid to the clinician in diag-

nosing this condition. Therefore, the surgical diagnosis depends upon the history. A history of one or more attacks of pain and tenderness in the lower right quadrant of the abdomen accompanied by nausea may be obtained from the patient if careful inquiry is made.

Treatment.

Almost every dyspeptic condition has a medical aspect, and in its early stages should be given dietary treatment to try to bring about relief. Where a decision is to be made between surgical and dietary treatment, the time and money of the patient are often deciding factors, together with his mental ability to obey faithfully a long and complicated dietary regime. But outside of these determinants, and in general, dietary treatment is indicated in early dyspepsias and surgical treatment in long-standing chronic dyspepsias.

Surgery.—In opening the abdomen for any one of the chronic dyspepsias, an incision large enough for an exploration of the abdomen should be made. A right rectus incision is the one usually chosen.

In gastric ulcer the ulcer may be excised by a cautery, with a knife, or by resecting a wedge shaped segment. Gastro-enterostomy should usually follow any form of ulcer excision. If the ulcer is large, a circular resection, or a subtotal gastrectomy may be done.

A gastric carcinoma in any portion of the stomach can be easily palpated and located. After it has been found, a thorough search should be made for metastases. If none is found, a wide removal by a resection of the stomach should be done, and this is followed by re-establishing the continuity of the alimentary canal by an anastomosis of the stomach to the duodenum or jejunum.

Duodenal ulcer, like gastric ulcer, should itself be treated surgically if practicable, not so much on account of possible malignant change as because hemorrhage may occur at some later date. It can be (1) infolded by placing a purse-string suture around it, (2) destroyed by cauterization, or (3) excised with a knife. Following any one of these operations a gastro-enterostomy may be done. Instead of any of the procedures just mentioned, a pyloroplasty combined with excision may be made. Where there is a marked cicatrix causing stenosis or pyloric obstruction, it is best to leave the ulcer untreated and do a gastro-enterostomy.

For chronic cholecystitis, with or without stones, the gall-bladder should be removed if possible. Some few cases are encountered where there has been an acute or sub-acute attack, where jaundice is present, and also where there are such complicating diseases as nephritis, etc., in which a cholecystostomy is advisable.

In the cases that are operated upon for gastric ulcer, duodenal ulcer, cholecystitis, cholelithiasis, etc., the appendix should be inspected and palpated, and unless there is a contraindication in the condition of the patient, the appendix should be removed. When the diagnosis of chronic appendicitis only has been made, and the abdomen has been opened for this condition, the liver, gall-bladder, bile-ducts, pancreas, stomach and duodenum should be examined, as chronic pathological conditions in these tissues are often associated with chronic appendicitis.

1801 *Eye Street, N. W.*

INDICATIONS AND CONTRA-INDICATIONS FOR THE EXTRACTION OF TEETH.*

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In every phase of dentistry there have been evolutionary changes which have kept pace with the progress of civilization. In keeping with the other branches, exodontia, too, has undergone many and sundry metamorphoses before it reached its present state as a distinct specialty.

We may assume that from time immemorial man has been subject, more or less, to diseases of the mouth which have made necessary the removal of teeth. Even centuries ago the value and importance of the teeth were recognized. Evidences of the practice of exodontia, in one form or another, may be found in early historical writings and in museums. Through the years many factors have influenced the character and standing of this branch of medicine. The removal or retention of teeth has likewise been affected by the scientific or pseudo-scientific thought of the times.

The profession, however, during these latter years has been somewhat overburdened with the ideas of extremes. In modern times we recognize that an era of "tooth pulling" followed the invention of the anatomical for-

*Read before the meeting of the Fourth District Dental Society of North Carolina, at Fayetteville, December 9, 1926.

ceps, in 1840, by the English dentist, Sir John Tomes. There have been periods when the slogan was "save all teeth." When denture making reached a higher degree of perfection than that which previously prevailed, a craze for extraction was again prevalent. The advent of the X-ray and its universal use in dentistry and the problem of focal infection have both played mighty roles in guiding the destinies of dentistry. So have root canal therapy and root resection. Then, too, anesthesia, both local and general, have played their parts. Between the extremes of "salvation and damnation" of teeth,—and this has so often been abstractly considered at times, apparently without much concern for the patient,—the pendulum seems to have swung its course. While there are "100 percenters" on both extremes, the profession as a whole is settling down to a more rational consideration of the subject at hand.

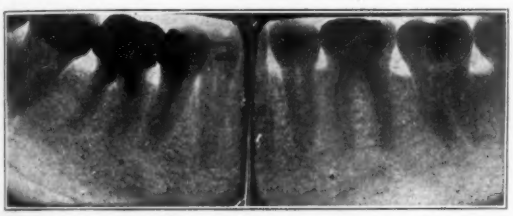

Fig. 1.—Pulpless teeth which do not show any X-ray evidences of structural changes which might indicate pathology.

Choice of Anesthetic

In considering exodontia, let it be understood that for the time being we shall eliminate the subject of anesthesia, for exodontia is one thing and anesthesia is another. The various agents generally used in dentistry all have their merits and their indications. The choice of the anesthestic to be employed should be determined by the exigencies of the case and the selection should be left to the operator in charge. It might be borne in mind that you may have good anesthesia without good exodontia, but you cannot do good exodontia without good anesthesia.

Indications for Extraction

It must be understood that no hard and set rule can be laid down as a guide for the indications and contra-indications for the removal of teeth. For the sake of convenience, the indications for extraction may be divided into four groups:

First: All teeth which are, *per se*, objectively so far decayed or broken down that they cannot be restored to function. This group would also include chronic and acute abscessed teeth giving clinical symptoms of involved adjacent tissues.

Second: All teeth which show X-ray findings of abnormal and harmful structural changes of the root apices.

Third: All supernumerary teeth which may be out of alignment; malposed teeth; teeth which interfere with a proper restoration that is indicated; to aid orthodontia.

Fourth: Such impacted teeth as are giving local or general symptoms or communicate with the mouth; other impacted teeth which may be removed as a means of preventing future possible complications.

Contra-Indications

Under contra-indications may be grouped all teeth which can be restored to function and usefulness; all cases of patients where the general health is such that it would be inexpedient to operate; cases where good surgical judgment would dictate that the operation be temporarily deferred if remedial measures will afford relief.

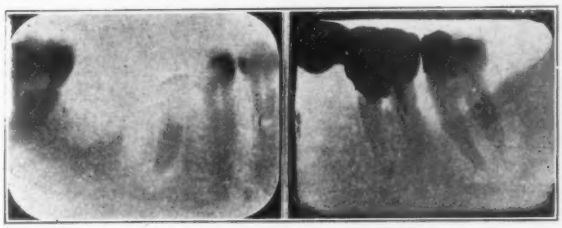

Fig. 2.—Roentgenograms showing structural changes at apices of teeth indicative of pathological lesions.

In certain types of acute abscesses and in cases of acute inflammatory areas over erupting third molars extraction is contra-indicated. Temporary relief should be given and measures instituted to restore the tissues to as near a normal condition as possible before surgical intervention is undertaken. This may be accomplished in some cases by a superficial cleansing of the area and by the application of extreme heat or cold externally, as may be indicated. By judicious postponement, complications of possible serious involvement of adjacent tissues are avoided. Extraction is also contra-indicated in some cases of patients suffering with severe heart lesions. Under

these circumstances the medical attendant should always be consulted.

In spite of the foregoing classifications we recognize that there are varying circumstances to alter the situation. Our best judgment must prevail in studying the particular case presented. Patients seek the services of a dentist for four reasons; *first*, for the relief of pain; *second*, for the relief of some general disturbance, having been advised that the teeth may be a factor in the production of a general disease; *third*, for aesthetic purposes; and *fourth*, as a prophylactic measure in maintaining a good masticatory apparatus.

Differential Diagnosis

It is not difficult in many cases to decide whether or not teeth should be removed. The symptoms may be so obvious that there would be no occasion for a difference of opinion. With many other cases, however, decision is not so easy without clearly weighing all the evidence at hand. A patient, whose general

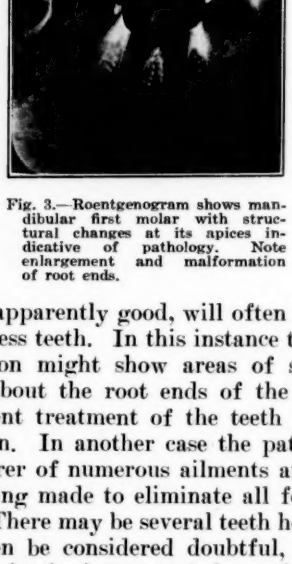

Fig. 3.—Roentgenogram shows mandibular first molar with structural changes at its apices indicative of pathology. Note enlargement and malformation of root ends.

health is apparently good, will often have several pulpless teeth. In this instance the X-ray examination might show areas of structural changes about the root ends of the teeth, in which event treatment of the teeth might be undertaken. In another case the patient may be a sufferer of numerous ailments and an effort is being made to eliminate all foci of infection. There may be several teeth here which might even be considered doubtful, yet good judgment, in the interest of the patient's welfare, would dictate that these teeth should be removed.

There are some patients, for instance, who present conditions in their mouths which are not favorable for full denture construction. It is highly important in these cases to retain, if possible, some unaffected teeth which would aid in the retention of the restorations. The opposite may also be true. There are other cases in which the retention of some teeth, although not pathologically involved, would mitigate against successful results, in which case the teeth should be removed.

It is equally as important, if not more so, to decide when not to remove teeth as it is to decide when to remove them. We have all seen cases of remarkable results following the removal of infected teeth. We have also seen many cases where good, bad, and indifferent teeth have been sacrificed on the altar of advancing science without any material aid to the patients. When the examination of a case shows the presence of teeth which are believed to be pathologically involved, it is only fair

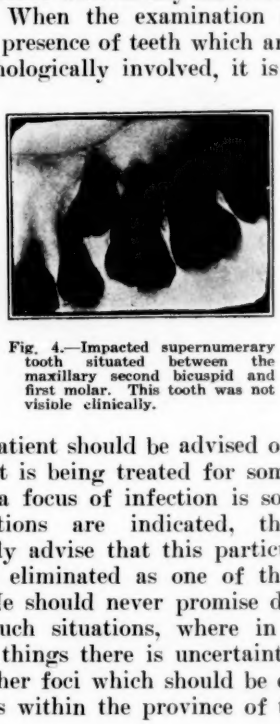

Fig. 4.—Impacted supernumerary tooth situated between the maxillary second bicuspid and first molar. This tooth was not visible clinically.

that the patient should be advised of this. If the patient is being treated for some ailment in which a focus of infection is sought, and if extractions are indicated, the dentist should only advise that this particular focus should be eliminated as one of the possible causes. He should never promise definite results in such situations, where in the very nature of things there is uncertainty. There may be other foci which should be eliminated and this is within the province of the physician.

An examination and diagnosis which may be made at one time does not mean that this opinion will suffice for all time. The patient's general health is changeable and so are the many other factors involved. The dentist, in making his diagnosis and recommendation, is of necessity mainly influenced by the more recent findings in the case. While conservatism is the present key-note, we must not let this so blind our viewpoint as to interfere with such radical procedures as may be necessary when the patient's general health demands it.

Impacted Teeth

There is much difference of opinion at the present time regarding impacted teeth. The three teeth most commonly found impacted are the maxillary cuspids and third molars and the mandibular third molars. It is the mandibular third molar which most frequently offers the greatest trouble to both patient and dentist. The statement has been made that unless an impacted tooth is brought into normal position the tooth should be removed. This assertion might be viewed with some reservation. We do know, however, that there are many impacted teeth, particularly those which have some portion of the crown protruding through the soft tissues, that start up some local discomfort or become infected, and that surgical interference is indicated. We also know that there are many cases of patients who have suffered with some obscure pains in and about the head and that these conditions have been benefited by the removal of impacted teeth. The subject of impacted teeth might in itself occupy the attention of a whole paper. Here, however, as in the removal of infected teeth, the patient should not be led to believe that cures are always effected.

Extent of Surgical Interference

There was a time when nothing was thought of removing at one sitting a large number of the affected teeth, even if all thirty-two were involved. Since it is now an accepted fact that the teeth and adjacent structures play an

Fig. 5.—A horizontal impacted mandibular third molar.

important role in the health of an individual, we must guard against too much interference at one time. Where a number of teeth have to be removed, caution must be exercised in not removing more than a few at one sitting. Where it is suspected that the teeth may be one of the foci of infection in the patient's present illness, it is better not to remove more than two or three teeth at a time and to allow at least three or four days to intervene before the next operation. In cases of extreme illness it is the better part of wisdom, in instances, to remove only one tooth at the first visit and note the patient's reaction before proceeding with further extractions at a subsequent date. The patient may have an exacerbation of symptoms, a rise in temperature or general toxemia, etc. In normal healthy individuals several teeth may be removed at each visit; when a large number of teeth have to be removed, the mouth may be divided into quadrants.

Fig. 6.—Roentgenogram showing impacted maxillary cuspid in patient 75 years old. Patient had been wearing a full upper denture for thirty years. Destruction of the osseous tissue over the tooth and of the crown of the tooth developed; a fistula was evident in the palate.

Medico-Dental Aspect

Who shall decide whether or not teeth should be removed? Surely the patient is not competent. Where the patient is under the care of a physician and the mouth is suspected as a possible focus of infection, it is the duty of the physician to refer the patient to the dentist for consultation. It is for the dentist to examine, consider and recommend what should be done. Because of the intimate correlation of dentistry and medicine as it affects the patient, there is need for the utmost co-operation between the dentist and physician. Patients should be treated as individuals and not "*en masse*;" the patient's welfare demands a personal interest. There is no conflict in the treatment of patients when the dentist and physician both recognize their respective fields and responsibilities.

A careful X-ray examination of the mouth is necessary before venturing an intelligent opinion. The examination should include the edentulous areas as well as all the teeth. It must be understood, however, that the radiographic findings are only an aid to diagnosis and that the clinical findings, both general and local, are of inestimable value. It is then that the competent and careful dentist correlates these findings with the history of the case. Upon these data will he base his recommendation and proceed accordingly.

410 *Professional Building.*

THE CURABILITY OF DIABETES MELLITUS—REPORT OF TWO CASES.*

By MARTIN LASERSOHN, M. D., Richmond, Va.
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Clinicians have always regarded true diabetes mellitus as an incurable disease. Several reports of apparently cured cases appear in print, but these reports are peculiarly limited to the rare recovery in a child, or in an adult with some other glandular disturbance. Thus, John[1] cities two cases previously reported by Joslin and by Von Noorden of diabetic children, aged 7 years, and reports the spontaneous disappearance of diabetes in an adult case associated with acromegaly. He also presents the data of another patient in whom there was a marked restoration of the carbohydrate tolerance so that on a diet consisting of 200 grams of carbohydrate, 70 grams of protein and 157 grams of fat, a total of 2,500 calories, there was no increase in the blood sugar. John then concludes that "the carbohydrate tolerance is restored, and is normal." With appropriate therapy it is not very unusual to see such a restoration of the carbohydrate tolerance; a cure, however, consists of the maintenance of such a tolerance, or better still of a larger one, over a long period of time. John does not report the glucose tolerance test in this case. As will be shown later, such a patient, although apparently cured, may show the typical curve of the diabetic upon the administration of the glucose for the test, and his future course may show a return of the symptoms and signs of diabetes, as is demonstrated in *Case* 2 below.

Abstracts of the histories and other data in two cases that demonstrate an apparent cure in diabetes mellitus follow. One was treated with insulin; the other by diet alone. The marked increase in carbohydrate tolerance seen in each case is very striking, but that this "cure" is not permanent is shown by the subsequent events in one of the cases and by the glucose tolerance test in both. These patients were first seen by Dr. J. Morrison Hutcheson, to whom I am indebted for the early data of these cases, and for the privilege of studying them on their recent return visits to him.

Case 1. H. R., a white male, 19 years old, was first seen on March 14, 1924. The patient stated that for 6 months he had been aware of an abnormal thirst and that he had been passing large amounts of urine day and night. He also complained of weakness and "nervousness," and of cramping in the left leg. He stated that he weighed 143 lbs. (65 kg.) in January, 1924, but that since then he had lost 13 lbs. (5.9 kg.)

The general physical examination was essentially negative. His weight was 130 lbs. (59 kg.) and his height 67 inches (167.5 cms.). Blood pressure 102 systolic, 70 diastolic. The laboratory findings, March 14, were: hemoglobin, 95 per cent; white blood cells, 8,200 per cubic millimeter. Differential count: neutrophils 59 per cent; small and large lymphocytes 41 per cent. Blood smears appeared normal. The blood Wassermann reaction was negative. Urine: sugar positive, trace albumin, acid reaction, straw color, sp. gr. 1.044. Microscopic examination showed few epithelial cells, occasional small clumps of pus cells, a little mucus; no casts or red blood cells. Blood sugar 285.2 mgm. per 100 cc. blood; nonprotein nitrogen 34.4 mgm. per 100 cc. blood.

This patient was put on a diet consisting of 119 grams of protein, 117 grams of fat, and 86 grams of carbohydrate; a total of 1873 calories. On this diet the glycosuria disappeared in a few days; but a week later he again showed sugar in the urine and for this reason his carbohydrate was decreased to 61 grams.

On May 3, 1924, almost 2 months after the first visit, the urine was found negative for sugar and the patient reported that he had noticed no sugar in it since April 2.

On July 12, 1926, more than two years later, the patient returned for observation. He stated that he was feeling fine, that his sleep was sound, and that he was working six days a

*From the Department of Internal Medicine, Medical College of Virginia.

1. John, H. J.: Spontaneous Disappearance of Diabetes, J. A. M. A., 85: 1629: Nov. 21, 1925.

week. He said that his diet consisted of the articles in the list given him over two years ago, but that he had been eating in amounts as desired, including the meat, fruit, milk, eggs, vegetables, cream and butter. In addition, on an average of once every month, he stated that he ate "everything," including desserts, and that the urine when examined by him at the end of such a day and the next day showed no sugar. He stated, further, that a day or two ago, in addition to the foods usually eaten, he had taken "two saucers of ice-cream and four or five apples" and that five hours later he found no sugar in the urine. His blood sugar, taken before breakfast, July 12, was only 135.1 mgm. per 100 cc. blood. The urine on this day had a specific gravity of 1.021 and it contained no sugar. His weight was 121 lbs. (59.5 kg.).

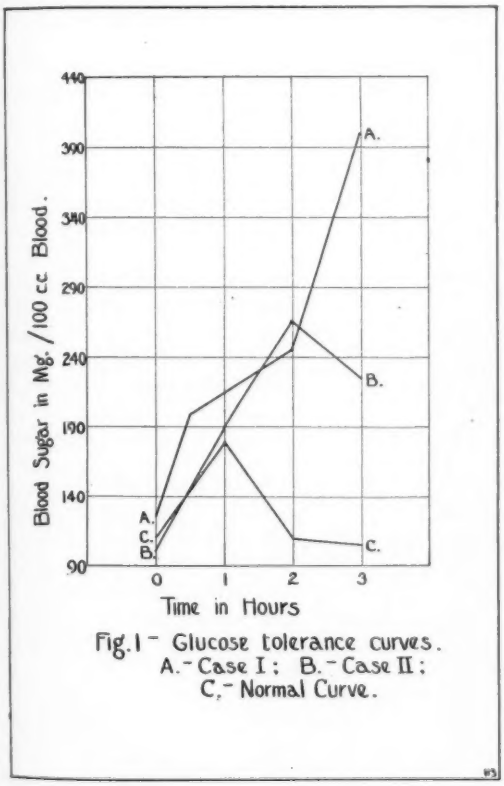

Fig. 1 - Glucose tolerance curves. A.-Case I; B.-Case II; C.-Normal Curve.

These findings were so suggestive of a complete restoration of the carbohydrate tolerance, and possibly complete recovery from the diabetes, that it was thought advisable to do a glucose tolerance test. The test was done on July 13, 1926, and the results are noted in Fig. 1—A and Table I.

TABLE I.—GLUCOSE TOLERANCE TEST IN CASE I, JULY 13, 1926.

	Before	After ½ hr.	After 1½ hr	After 2 hr.	After 3 hr.
Blood sugar before and after ingestion of glucose in mg/100 c.c.	114.2	198.0	229.8	246.9	400.00
Sugar in urine, in per cent.	neg.	neg.	1.2	2.0	2.5

The method employed is essentially that described by Olmsted and Gay[2], using 1.75 grams glucose per pound body weight. It is readily seen that the curve is that of diabetes mellitus.

Case 2. W. F. F., a white male, 42 years old, was first seen on November 20, 1923. He complained of loss of weight and a large amount of urine. He stated that he had been well up to 30 days ago when he "took cold." Since the onset of this cold he had to cough and expectorate and had lost weight. Before getting sick he said his weight was 165 lbs. (74.5 kg.).

There were no especially noteworthy findings in the physical examination except for the chest where, on auscultation, small, moist rales were heard posteriorly at each apex. The breath sounds at the left apex behind were broncho-vesicular in character. The roentgenologist's conclusions from stereoscopic plates of the chest were as follows: "There is present a moderately advanced tuberculous lesion in the upper right lobe. The chest appears normal elsewhere except for a slight suspicion of involvement at the left apex." The patient's weight at this time, November 20, 1923, was 142 lbs. (64.5 kg.), and his height 67 inches (167.5 cms.). The urine had a specific gravity of 1.040, showed a trace of albumin and was positive for sugar. The blood sugar was 281.7 mgm. per 100 cc. blood.

On December 1, 1923, the patient weighed 143 lbs. (65 kg.) and stated that he was feeling fine and free of all symptoms. He had been taking a diet consisting of 123 grams of protein, 108 grams of fat, and 47 grams of carbohydrate—a total of 1652 calories. On this diet, with 9 units of insulin, he showed no glycosuria and his blood sugar was 122.9 mgm. A week later the diet was raised to 2300 calories and the insulin kept the same.

2. Olmsted, W. H. and Gay, L. P.: Study of Blood Sugar Curves Following a Standardized Glucose Meal; Arch. Int. Med., 29: 384 (Mar.), 1922.

On September 22, 1924, the patient returned for observation. He had been taking his diet and insulin, as previously directed, for almost a year. On admission to the Johnston-Willis Hospital, he was put on the same diet, but without insulin; protein 155 grams, fat 148 grams, carbohydrate 87 grams; calories 2300. He was observed for 4 days and during this time it was found that his 24 hour urine specimens were negative for sugar and that the fasting blood sugar, taken twice, did not exceed 90.9 mgm. During this time there was no cough, sputum, fever or rales.

On September 3, 1926, almost two years later, the patient again returned for observation. At this time he stated that for the past two years he had not followed any particular diet but that he had been eating "everything" except sweet tasting foods, potatoes and pastries. He said that he was eating large amounts of food and that he averaged about 6 slices of bread a day. He noticed no abnormal thirst or polyuria and no other symptoms except loss of weight. Examination at this time showed the patient to be quite emaciated. He weighed only 118 lbs. (53.6 kg.). There was marked dullness on percussion in both apices of the lungs and many moist rales in the dull areas. The urine showed no sugar and the fasting blood sugar was only 125 mgm.

Here was a very surprising restoration of the carbohydrate tolerance in a tuberculous diabetic. Because of the normal blood and urine findings, despite the very liberal diet, it was thought advisable to do a glucose tolerance test, as such findings suggest complete restoration of tolerance and perhaps even permanent cure. This test was done two days later, September 5, 1926, with the results as noted in Fig. 1-B and Table II. The curve is that of diabetes mellitus.

TABLE II.—GLUCOSE TOLERANCE TEST IN CASE II., SEPTEMBER 5, 1926.

	Before	1 hr. After	2 hr. After	3 hr. After
Blood sugar before and after ingestion of glucose in mg. /100 c.c.	99.9	187.7	263.1	224.1
Sugar in urine, in per cent.	neg.	neg.	0.5	0.7

The subsequent course of this patient further brought out that he was not cured. He returned November 27, 1926, complaining of great thirst, polyuria, voracious appetite and loss of weight to 112 lbs. (50 kg.). He stated that that these symptoms started a week after the glucose tolerance test, but also stated that, since the test, he had started to eat much more than before, excluding only actual sweets and desserts and eating three slices of bread with each meal. He had used no insulin. His urine showed a large amount of sugar and his fasting blood sugar was 303 mgm. He was put on a diet consisting of 72 grams of protein, 203 grams of fat and 33 grams of carbohydrate; calories 2247. On this diet, and 20 units of insulin before the noon meal, his 24 hour urine specimens showed sugar and his blood sugar (fasting), taken November 30, was 312.5 mgm. On December 1, twenty more units of insulin, before supper, were given and his blood sugar taken just before the next breakfast was 182.1 mgm. On December 3, the 24 hour urine showed no sugar. On December 4, the diet was raised to protein 82 grams, fat 215 grams, carbohydrate 50 grams; total calories 2463, and the insulin was raised to a total of 60 units. Two days later the fasting blood sugar was 151 mgm. and the patient was discharged from the hospital on this diet and insulin. Changes in the diet and insulin were necessarily hurried as the patient could stay no longer.

It is interesting to note that, while there was a return of the diabetic symptoms, there was a marked improvement in the tuberculous infection in the lungs. On Dec. 29, 1926, the roentgenologist reported that "in comparison with examination made Nov. 20, 1926, the involvement of the upper right apex does not appear to be as extensive as previous films showed. There is a considerable amount of fibrous tissue deposit present. There is an occasional soft tubercle, but these are not nearly so marked as previously noted. There are many calcified tubercles around the hilum and lower portion of the lung. The lesion in the upper left lung appears to be healed, there being no evidence of any soft tubercles present." The conclusions were that there was a marked improvement to be noted over the previous examination, but that the tuberculosis was not entirely quiescent.

These two cases demonstrate the marked increase in the carbohydrate tolerance that can occur in diabetes mellitus. At one stage of the clinical picture when the improvement is most marked, one would have practically no evidence to show that they are still diabetic and a decision that a cure has been effected is likely to follow. In each case, however, the results of the glucose tolerance tests show that the

sugar burning capacity of these individuals is not normal, and when one follows the future clinical course of such patients, as was shown by *Case* 2, we find a return of the diabetic symptoms and signs.

Partial recovery from diabetes, that is, increase in the carbohydrate tolerance, is not only seen clinically but can be produced experimentally as well. Copp and Barclay[3] came to the conclusion from experiments on dogs made diabetic, that the damage done to the islands of Langerhans by subsequent overfeeding could be repaired, providing the beta cells had not progressed beyond the stage of hydropic degeneration and proper treatment was instituted. Clinically, however, the destructive process is rarely, if ever, reversible to a degree that manifests itself in complete and permanent restoration of the sugar burning capacity. It may be that complete recovery does not occur because the damage done the human pancreas has progressed beyond the reversible stage, or it may be that constant damage is being done by whatever injurious agent it is that causes diabetes mellitus.[4]

With the advent of insulin there arose the hope that diabetes might be eventually cured. Cures of undoubted cases have so far not been seen as a result of insulin therapy. Harrison[5] states that to his knowledge "no case of human diabetes mellitus has as yet been published in which it was possible eventually to stop the insulin entirely and to allow an absolutely unrestricted diet, without the return of hyperglycemia." In Boyd and Robinson's[6] case, while there were noted clinically a very marked increase in the carbohydrate tolerance and at autopsy a regeneration of the islands of Langerhans, yet it is noteworthy too, that, although this patient had been treated with insulin for a year, there was never complete restoration of the tolerance. While the islands had regenerated in this case, a child nine years old, no such regeneration was noted in the twenty-six autopsied cases, all adults, reported by Warren and Root[4], who state that they could not, so far as they could determine, note any difference between the pancreases of those given insulin and those under dietary treatment alone, with the possible exception of one insulin treated patient who showed more apparently normal islands than would ordinarily be the case. These writers certainly found no marked evidences in the adult of a regenerated pancreas, and such findings coincide with clinical experience of the incurability of this disease.

From post-mortem and experimental data, then, and from clinical experience, it is obvious that at the stage of apparent cure in diabetes mellitus one is not justified in advising a general diet with an unlimited amount of carbohydrate. Should such a patient develop an acute infection it would still be very important to study the blood and urine and be on guard to institute such dietetic and insulin changes as may be necessary. The present day therapy is very effective, indeed life saving, and with it one can restore the diabetic to the enjoyment of good health, to his work, and to happiness, although he may never become cured.

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3. Copp, E. F. F. and Barclay, A. J.: The Restoration of Hydropically Degenerated Cells of the Pancreatic Islands in Dogs under Insulin Treatment. **J. M. Research**, 4: 445 (Sept.-Oct.), 1923.

4. Warren, Shields, and Root, H. F.: The Pathology of Diebetes, with Special Reference to Pancreatic Renegeration. **Am. J. Path.**: 1: 415 (July), 1925.

5. Harrison, G. A.: Can Insulin Produce Even a Partial Cure in Human Diabetes Mellitus? **Quart. J. Med.**, 19: 223 (Jan.), 1926.

6. Boyd, G. L. and Robinson, W. L.: Evidence of Regeneration of the Pancreas in an Insulin Treated Case of Diabetes. **Am. J. Path.**, 1: 135 (Mar.), 1925.

ESSENTIAL FACTS IN CONNECTION WITH THE USE OF LOCAL ANESTHESIA IN NOSE AND THOAT SURGERY.

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General Discussion.

Many surgeons have come to the conclusion that it is not a question of the form of drug used in a complete or partial local anesthesia, but rather the attitude of the surgeon towards the operation in mind. In the hands of most surgeons, cocaine in weak solutions, or any of the synthetic preparations, is believed to be effectual as far as the matter of pain is concerned. A technique can be perfected from experience which will make it possible to use cocaine or any non-toxic preparation in quantities which will exclude all pain, but this is only a part of the success which may surround any operative procedure. The purpose of an operation is not accomplished simply by performing the operation without pain. As a result of this faulty opinion that operations are successful if done without pain, there are too many operations performed without due regard to diagnosis, the seriousness which may

be associated with the operation, the shock resulting from it and the final result attending it.

All operative procedures, from a simple opening of a minor abscess of the throat to the radical mastoid or radical frontal, should be approached with caution. The same preparations should be made for a case where local anesthesia is contemplated as if a general anesthetic were used.

Perhaps the best aid in the success of a local anesthetic is proper conduct as to diet. In withholding foods and liquids we do not have the unpleasant situation of nausea and vomiting of foodstuff, nor the effort to empty a stomach full of fluid. A good pre-operative medication is a hypodermic of morphine (gr. 1/8) with scopolamine (gr. 1/200) one hour previous to the operation, and instructions given to have the patient's surroundings made quiet. The patient is thus placed in a mood of indifference to what might occur during the operative procedure.

As a rule, many surgeons unintentionally use about twice as much of any preparation as may be reported on the operative history blank; for instance, in swabbing the throat or the nose with cocaine preliminary to a tonsil or septum operation, one may not take into account the amount of cocaine that drips from a wet or soggy sponge or mass of cotton.

The matter of post-operative treatment is important after a local anesthetic. The patient should remain in the hospital from 24 to 48 hours after the operation, and even longer than this when work of a radical nature is done, necessitating in some instances a stay of at least a week or ten days.

The question of bleeding is a matter which can be controlled in local anesthesia. It is not necessary to use as much adrenalin as has been heretofore thought necessary. A small amount of adrenalin will control bleeding and at the same time allow natural hemostasis to occur.

It is the opinion of those who have done much operative work with local anesthesia, that local anesthesia can be carried to a greater variety of patients without danger than could be promised for any form of general anesthesia. Age plays no role in the success of the anesthesia any more than such physical disabilities as heart lesions.

All cases should be hospitalized, prepared properly for operation, kept comfortable prior to operation, and be treated afterwards as surgical cases.

The question of anesthesia in nose and throat work was studied by the American Medical Association (Section on Laryngology, Otology and Rhinology) from the point of view of the special advantages and disadvantages. They reported their extensive research to the Section on Laryngology, Otology and Rhinology at the seventy-first annual session of the A. M. A. in 1920. The matters of advantages and disadvantages of local anesthesia, sterilization, the occurrence of edema and sloughing, idiosyncrasies, toxicity, new local anesthetics, clinical investigations, replies to questions on the subject, the administration of morphine before operating, the pharmacological effects of local anesthesias and the comparison of local and general anesthesias, were all taken up by the committee appointed. Their report is summarized as follows:

"As a result of the study of the literature, clinical experience and animal experimentation, we conclude that:

1. There is a remarkable similarity between the clinical facts and animal experimentation.
2. None of the synthectic products equals cocain in its local effect when applied to the mucous membrane.
3. These synthetic products may be freely injected, if slowly done, in proper doses in unlimited quantities.
4. Fatalities either occur immediately or not at all.
5. The drug is eliminated in the liver.
6. The greatest danger lies in too rapid injection or entering a vein.
7. A peculiar susceptibility which we term idiosyncrasy does exist, as the drug enters into the circulation so rapidly that death is almost immediate.
8. A further study of the toxicity of these local anesthetics will result in definitely establishing the cause of death.
9. Local anesthesia is undoubtedly the choice of methods by all American rhinologists in nose operations.
10. It is also the choice of a very large proportion of American laryngologists in throat operations.
11. There is a small number who believe that tonsil operations particularly are best performed under general anesthesia.

12. The dangers of hemorrhage during tonsil operations under local anesthesia are no greater than under general anesthesia.

Suggestions.

1. All operations ought to be performed with the patient recumbent, beginning with the first application of the local anesthetic, except in intra-nasal sinus operations, in which the head and shoulders may be elevated to an angle of 45 degrees and the table raised so that proper direction may be maintained.

2. Each operation should be preceded by a hypodermic injection of morphine and the patient kept in the hospital.

3. *In nose operations*, the committee recommends the application of, first, epinephrin, followed then by cocain, and the injection of the synthetic drug—*introduced slowly.*

4. *In throat operations*, a 5 per cent solution of cocain should be applied, followed by the *slow injection* of the synthetic product.

5. When there may be a suspicion of possible danger, one-fourth of the amount of anesthetic to be used at the time of operation should be applied and the patient watched for possible toxic effects.

6. Among the cases included in the latter are those with evident cardiac disease, exophthalmic goitre, or other disturbance of internal secretion.

Conclusions.

1. Local anesthesia is the ideal method to be used in operating upon affections of the nose and throat.

2. None of the dangers that have been mentioned are as great as those following general anethesia. The committee recommends the use of soluble tablets for making the solutions freshly as required. These to be dissolved in hot water (sterile) by the operator. The unnecessary deaths quoted from 'mistake of druggist' or 'of nurse' would thus be avoided."

In a very much more recent report, which is really a continuation of the former research investigation, the committee reports on the toxic effects following the use of local anesthetics.

"The local anesthetics were used in the nose or antrum of six patients whose deaths are reported and on twenty for removal of the tonsils * * * *.

"The table shows that cocaine was applied in at least twelve of these cases in concentrations greater than the committee now recommends as being safe; one death was due wholly or mainly to morphine and one patient received an injection of apothesin with epinephrin. Several of the records are so incomplete that no attempt is made to fix the immediate cause of death. Only one of these deaths is apparently due to procain."

In the summary, it is stated that procain "is certainly by far safer than any of the other local anesthetics in common use, but that does not mean that procain should be used without caution, for it is capable of causing death when large quantities are injected into the tissues. Butyn, alypin, apothesin, stovain and cocain are probably about equally dangerous when injected into the tissues and when concentrated solutions are applied."

In its recommendations, the committee states that *cocain* should not be injected into the submucous tissue or subcutaneously. Cocain paste ("mud") should not be used as a preoperative measure. Its use in that way is unreservedly condemned. Especial care should be exercised in the use of local anesthetics to the nose. The committee believes it safe to use cocain not over 10 per cent and in total amounts of from 10 to 15 minims containing from 1 to 1.5 grains, this to be applied locally. Not under any circumstances shou.d it be injected. Procain should not be used in greater concentration than 1 per cent; apothesin not greater than 2 per cent and not more than 1.5 grains; butyn should not be injected but should be applied in 2 per cent solutions. Epinephrin serves a valuable purpose in causing a bloodless field and in delaying the absorption of a local anesthetic, especially procain, but the addtion of epinephrin in amounts of 1 mgm. or more to a solution of cocain of 10 per cent results in a greater degree of toxicity than that from cocain alone when rapid absorption takes place; hence, the use of large doses of epinephrin with cocain is deemed unsafe, and epinephrin should not be used in greater concentration than 1: 10,000, and of this not more than 10 minims with cocain.

When severe toxic symptoms result, efforts should be made to sustain the heart in order that the drug may be carried to the liver, where it is destroyed. Cardiac massage, and, perhaps, epinephrin in proper intracardiac doses, are indicated when the heart has stopped.

Artificial respiration is indicated as a rule.

Ether inhalations are of value only in controlling convulsions.

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INTERNAL DERANGEMENT OF THE KNEE.*

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"Internal Derangement of the Knee" is a condition about which voluminous literature has appeared in the past ten or fifteen years. Because other articles have been so complete and have been based on a review of so many more cases, it is with some hesitancy that the writer presents a paper dealing with this by no means uncommon disability. This hesitancy, however, is somewhat modified by a fact which strikes the orthopedic surgeon who reviews his cases of injury to the knee.

In studying the cases to be discussed here and in reading case reports in other articles, one is impressed by the fact that usually the patient with an internal derangement of the knee has suffered from it for many months before he comes to operation and, what is even more striking, that the treatment given at the time of the first and causative accident has been wholly inadequate. As a rule, the sufferer is first seen by the family physician or the general surgeon, and it is not until the condition has become chronic and the derangement oft repeated that the orthopedic surgeon is consulted. Effective treatment of the primary injury will often prevent recurrences and the operation these usually require; and if this paper can help to make clearer the seriousness of the immediate injury and the damage to the knee joint which the repeated injuries cause, and to emphasize the importance of early, adequate treatment, that is its justification.

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DEFINITION AND HISTORY

"Internal Derangement of the Knee" is rather a loose term first employed by William Hey, of Leeds, in 1784. It covers a fairly wide field of injuries to the joint, but for the purposes of this paper only the following, which are placed in the order of frequency of occurrence, will be considered:

1. Injury to semilunar cartilage, most frequently the internal;

2. Loose bodies in the joint,—so-called joint-mice;

3. Injury to the anterior crucial ligament.

Although the name of this condition originated so many years ago, it is only in the last twenty years that it has been accurately diagnosed, its pathology demonstrated, and its treatment perfected. To Sir Robert Jones, of Liverpool, is due the chief credit for this advance in knowledge. Formerly, operations on the knee joint were so often followed by infection and dire results that it was a field approached with fear and trembling. He and others who followed his example showed that, with proper and strict technique, the knee could be explored with the same sense of security against infection with which an exploratory laparotomy is done.

ANATOMY OF THE KNEE JOINT

In order to understand the mechanism of production of injuries to the knee joint, familiarity with the anatomy of this articulation is essential.

The knee joint, according to Gray,[1] is not simply a hinge joint. It must be regarded as three articulations in one: one between each condyle of the femur and the corresponding tuberosity of the tibia, and a third between the patella and the femur. The three bones entering into the formation of the joint are connected together by ligaments, some within and others without the joint. Outside of the articulation are the anterior, or patellar ligament, the posterior, the internal and external lateral ligaments, and the capsular ligament. Within the chief ligaments are the anterior and posterior crucial, the two semilunar fibro-cartilages and the coronary ligaments.

The anterior or patellar ligament is broad and strong and with the patella forms the anterior wall of the joint. Behind it lies a mass of fat separating it from the capsule. The posterior ligament lies behind the joint.

The lateral ligaments, particularly the in-

ternal, are of interest in this subject. The internal extends from the inner condyle of the femur to the inner tuberosity and the shaft of the tibia, and its deep surface, according to Gray, is intimately adherent to the internal semilunar cartilage. Most anatomists consider it a strong ligament and important in the function of the joint. Recently, Bristow[2] has suggested that it is a comparatively feeble structure and merely a continuation of the deep fascia of the thigh and that the connection between it and the semilunar cartilage is less close than has been generally supposed. The external lateral ligament extends from the outer condyle to the head of the fibula with no attachment to the external semilunar cartilage.

All these ligaments are intimately connected with the capsule surrounding the joint.

Of the ligaments within the knee joint, the crucials are most important. The anterior crucial extends upward, backward and outward from an origin just anterior to the tibial spine to be inserted into the inner and back part of the external condyle. The posterior crucial extends upward, forward, and inward from the depression behind the spine of the tibia to its insertion in the outer and fore part of the internal condyle of the femur.

The semilunar cartilages, which are of great interest in internal derangement of the knee, are two crescentic lamellae which serve to deepen the head of the tibia for articulation with the femoral condyles. The outer circumference of each cartilage is thick, convex, and attached to the inside of the capsule of the knee; the inner border is thin, concave and free. They cover about the outer two-thirds of each tuberosity of the tibia, to which they are attached by the coronary ligaments, and are covered by synovia. The internal semilunar is nearly semicircular, is attached to the bone at its extremities, and the internal lateral ligament attaches to its mesial border. The external semilunar forms more of a circle, is attached to the bone posteriorly and blends anteriorly with the anterior crucial liagment. Its coronary ligament is the larger of the two, which allows it more mobility than the internal.

The muscles about the knee play a large part in controlling its function. According to Bristow,[2] the muscles form the first line of defense against strain, and the ligaments the second. With prolonged action of the damaging force, or too strong force, this second line gives away. The quadriceps extensor is the most important muscle in defense of the knee against strain and one which is wasted and atrophied will permit damage to the joint by a trauma of slight severity.

The knee joint permits of flexion and extension and, in certain positions, of slight rotation inward and outward. Just before complete extension is effected, the tibia glides obliquely upward and outward over the oblique surface of the inner condyle, and the leg is rotated outward, and in flexion the converse of these movements occurs, so that at the beginning of flexion there is an inward rotation of the leg. In certain positions of the joint, the tibia enjoys an independent rotation on the femur, due to the presence of the semilunar cartilages, while in semi-flexion, with all ligaments relaxed, there is possible a small amount of rotation between the tibia and the semilunars. The anterior crucial prevents the tibia slipping too far forward, while the posterior checks too great motion backward. Both assist the lateral ligaments in resisting lateral bending of the joint. The semilunar cartilages, in addition to the motion they permit, act as buffers and adapt the surface of the tibia to the condyles of the femur.

Mechanism of Injury to the Knee Joint

Because of the strength of the surrounding muscles and of the ligaments of the joint, dislocation of a normal knee is rare. But because of the complicated mechanism and function of the knee, the amount of leverage which can be brought to bear on it, the great range and variety of motion it enjoys, and because the articular surfaces are but ill adapted to each other, injury to the joint is frequent.

Severe trauma is necessary to rupture one or both crucial ligaments, which injury may be accompanied by a fracture of the tibial spine. Rupture of both crucials is always associated with rupture of other ligaments and usually dislocation of the knee. Abnormal hyperextension injures the anterior crucial, either by rupturing or stretching it. Stretching or even rupture of the anterior crucial is probably more common than has been thought and occasionally is found in cases of internal semilunar injury. Here the force and mechanism productive of injury to the cartilage continues to the point where the anterior crucial is stretched or torn.

Injury to the semilunar cartilages is produced by less severe trauma. Sir Robert Jones[3] states that injuries to the internal semilunar are about twelve times more frequent than those to the external meniscus. The external semilunar, due to its weak ligamentous attachments, is more mobile, and thus can better adjust itself to forced positions of the joint. Its shape, being more circular, also makes it less prone to injury. On the other hand, the internal semilunar is quite well stabilized in its posterior half by its attachment to the deep fibres of the internal lateral ligament. The anterior half is relatively free, and the whole cartilage more truly semilunar in shape. In Jones'[4] opinion, injury to the internal semilunar occurs when force is applied with the knee partly flexed and the femur rotated inward or the tibia outward. During flexion the coronary ligaments are stretched and a twisting, usually with some abduction of the leg, is an essential element in the injury. Bristow[2] thinks that the direct grinding or compressing force between femur and tibia is also a factor. He says that "the circular shape of the external cartilage would protect it from injury, while with the knee flexed and the tibia rotated outward, the long inner femoral condyle might reasonably be expected to press directly on the anterior part of the internal semilunar where a tear could easily be produced".

Summing up the views, the general opinion is that flexion, outward rotation of the tibia, abduction, and compression are all elements in injury to the internal semilunar, with the first two essential. As most persons walk and run with a slight external rotation of the tibia, strain is usually thrown on the ligamentous structures on the inner side of the knee. Occasionally the same sequence of forces injures the external semilunar.

Injury to the internal lateral ligament may or may not accompany injury to the cartilage. Abduction of the tibia on the femur causes this injury. In most of the cases of semilunar injury seen, the internal lateral ligament is not ruptured.

Type of Injury

By far the most frequent internal derangement of the knee is the injured internal semilunar cartilage. This is true in the series of cases on which this paper is based. These cases were all seen and operated upon for internal derangement of the knee on the service of Dr. William Tate Graham, chiefly at St. Luke's Hospital and the hospitals of the Medical College of Virginia, by him and the writer. As only those cases with complete records, including follow-up notes, were reviewed, this article does not include all the cases of internal derangement seen, or even all those operated upon in the arbitrary period of time selected. From November, 1923, to November, 1925, twenty knees were explored for internal derangement, and on sixteen of these the record is complete, with the follow-up notes based in all but three cases on an examination by the writer.

In these sixteen cases, the pathology found at operation was:

Injury to the internal semilunar cartilage alone in 10 cases.

Injury to the external semilunar cartilage alone in 0 case.

Injury to both semilunar cartilages in 4 cases.

Knee mice in 2 cases.

Tumor in knee joint in 1 case.

Injury to anterior crucial ligament in 1 case.

The injured crucial and one of the cases of knee mice had an injured internal semilunar also. These loose bodies were considered secondary to the ancient injury to the cartilage.

This predominance of an internal semilunar injury is found in all the collected statistics, making it the most common of injuries to the knee joint proper.

The exact nature of the injury to the cartilage is often difficult to determine. In Bristow's[2] report to the British Orthopedic Association, in 1924, of seventy-seven cases operated upon, there were the following pathological findings:

Anterior end detached	32
Circumferential tear	9
Tag projecting into joint	8
Cartilage displaced into intercondylar notch	8

He quotes Sir Robert Jones' report of 117 cases operated upon:

Fifty-three were torn from anterior attachment.

Sixteen were split longitudinally.

Eight were attached anteriorly and torn from capsule.

Seven were displacements of posterior horn.

Twelve were fractured transversely opposite the internal lateral ligament.

Eight were loosely bound circumferentially.

Timbrell Fisher's[5] figures give an equal num-

ber of longitudinal fractures and of detachment of anterior portion, while some surgeons claim that damage to the anterior portion is most common, and others that the circumferential split is most common.

To the writer it seems that both of these views may be correct; that is, the dislocation or tearing away from the coronary ligament may be the initial effect of the trauma and the fracture secondary. They may both occur at the first injury or the fracture may occur at a later time, the displaced cartilage being fractured between the condyle and the tuberosity. In this series there were eight cases of dislocation alone and five of fracture-dislocation. In only one case was there a fracture without dislocation (the "bucket handle" type). The usual fracture found was transverse—across the middle of the cartilage. That both displacement and fracture were present in nearly half of the cases was thought due to the repeated traumata which had occurred. There would seem to be no benefit in distinguishing between dislocation and fracture of the cartilage, as both are so frequently found and as the same type of accident may cause either or both.

It is interesting to note that in these sixteen cases, all of which were operated on by the patella splitting incision, thus insuring a complete view of the knee joint, four showed injuries of both the internal and the external semilunar cartilages. In other words, nearly 30 per cent of the cases in which the pre-operative diagnosis was injury to the internal semilunar cartilage showed also an injury to the external semilunar, as capable of producing the symptoms as the pathology found in the internal semilunar. Two of these cases showed a dislocation of the external cartilage which was much hypertrophied, amounting in one to a cartilage tumor of the anterior horn; the other two cases showed a fracture dislocation of the external semilunar. In two instances the causative trauma was quite severe; in the other two, it was no more severe than in the usual run of cases with injury to the internal semilunar alone.

The high percentage of patients showing injury to both cartilages suggests that this type of case may be more common than is taught. Alwyn-Smith,[6] in his article on the knee joint in Orthopedic Surgery of Injuries, remarks that on two occasions he has found simultaneous damage to both cartilages, but in much of the voluminous literature on internal derangements of the knee, there is no reference to injuries to both cartilages. In a review of 232 operations for internal derangements at the Massachusetts General Hospital from 1900 to 1920, by Surls and Osgood,[7] only two cases are reported in which both cartilages were removed and which, therefore, were presumably injured. Ninety-three of these cases were injuries to one or the other semilunar cartilage. Jones[8] reports two cases of injury to both in 400 cases operated on, and in 125 cases Mitchiner[9] does not mention one in which both were found injured. The disproportion between the findings in these large series and in our small one is very striking. Is this because the usual incision for removal of the internal semilunar does not allow full inspection of the external cartilage? The surgeon finds an injured internal semilunar and removes it, assured by the greater frequency of this injury that he thus relieves the derangement. Perhaps the reason for failure in a certain proportion of cases is that there is also an injured external semilunar, which is left in the knee joint.

Diagnosis of Internal Derangements

The diagnosis of an internal derangement of the knee, like so many conditions in medicine and surgery, is made largely from the history the patient gives. The examination of the knee is often of much less value, and the X-ray examination of the joint is usually even less positive. Yet neither should be neglected.

The History.—Practically always there is the fact of an injury to the knee. Usually the force causing the injury is one which would twist the joint, though this is not always evident in the history. Often the patient will state that the knee caught or locked and he fell, that it was then "worked back into place" and water formed on the knee. This is the initial injury to the joint. If properly treated at this time, the chances of a recurrence are greatly lessened, but unfortunately the treatment usually given, as will be shown when the question of treatment is taken up, is wholly inadequate.

As a rule, there is a history of recurrent attacks. He recovers from the initial attack, but at a subsequent date some slight force, such as stepping on an uneven surface, for example, will cause a recurrence. There may be locking of the joint at this time and usually

there is pain and effusion, but generally the recovery is much more rapid than at the first injury. After one recurrence, recovery without operation is unlikely.

A typical history is that of Case 1, which may be quoted here:

"Three years ago while playing basket-ball he twisted the left knee. There was pain and effusion, but he does not remember whether the joint was locked. Treatment was adhesive strapping for the knee and crutches for walking. Ever since this accident at frequent intervals he has been troubled with something slipping on the inner side of knee, which may occur at any kind of motion of the joint. When this slipping occurs, the knee becomes locked, and patient has to work it back and forth to get it comfortable. Often the knee gives away under him and throws him. The knee tires easily on walking. When taking any unusual exercise he wears a bandage and an elastic binder over the knee. During the year prior to operation he had two periods of effusion, severe pain, and disability of the knee joint, each brought on by a trivial cause. There were in this period several attacks of slight severity."

This is a classical history and one on which a diagnosis can be quite positively made. Of course, all are not so indicative, but it is striking how often a clear and accurate history will permit the diagnosis to be made.

Locking of the joint is an important feature. The history described it in eleven of our sixteen cases, nine of which showed injury to the semilunar cartilages, one a small tumor, not of the cartilage, within the joint, and the other loose bodies in the joint in addition to the injured cartilage. The presence of locking is a great help in the diagnosis, but its absence is not against the diagnosis of internal derangement. In the article by Surls and Osgood,[7] above referred to, locking was present in all of the external semilunar cases, in 82 per cent of the loose body and in 80 per cent of the internal semilunar. They make the interesting note that in one of their cases where the patient denied locking, the note of the examining physician stated that he found no locking, and that passive extension, but not active extension of the joint could be obtained. There was probably failure on the examiner's part to distinguish between extension and hyperextension, for at operation one week later the anterior end of internal semilunar was found dislocated and locking the joint. In our four cases of cartilage injury which gave no history of locking, every one on examination showed a limitation of extension, varying from 15° to incomplete hyperextension, and may therefore be considered as locked at the time of examination, the dislocated cartilage interposing to prevent complete extension.

Physical Examination.—Examination of the joint, even if less valuable to the diagnosis than the history, is important and should be thorough. Both lower limbs must be bared and both knees examined with the patient standing, sitting and lying on the table. After inspection of the knee, it is important to ascertain wasting or loss of muscle tone in the quadriceps of the affected side as compared with the other. Often instability of the knee following operation is due to weakness of the quadriceps. The joint is then palpated for effusion, points of tenderness, increased surface temperature, thickening, and loose bodies. Instability of the joint must be tested for. Only in full extension is a "wobble" significant. Then the range of motion, both active and passive, is ascertained.

In our series of sixteen cases, at the office examination, the affected knee was apparently normal in three. In two others there were only slight abnormalities noted. The other eleven showed positive findings, because in nearly all of them a recent recurrence had caused the visit to the office. In nine, slight to marked effusion was present. The other two showed swelling of the tissues about the joint. In seven there was tenderness over the antero-internal aspect of the joint, about where the anterior half of the internal semilunar was thought to be. In nine cases, there was limitation of extension, ranging from 30° to incomplete hyperextension as compared with the opposite knee. In one there was abnormal lateral mobility with knee extended as far as possible, and in this one an injury to the anterior crucial was found. In no case was a loose body or a displaced cartilage palpated. In the case with multiple knee mice, so great effusion was present that they were not felt.

X-ray Examination. The examination of the joint by a competent roentgenologist is an essential part of the record. While the plate is often negative, the mistaking of operating for an internal semilunar when there is an avulsion of the tibial spine or the presence of joint mice or hypertrophic arthritis will not

be made if a previous roentgenological examination has been done.

In our series, X-rays were negative in ten cases. In two cases there was revealed a slight outward subluxation of the tibia on the femur in extension. The case of loose bodies was diagnosed by the X-ray. In two cases the X-ray plates were somewhat misleading. One showed a shadow in the joint interpreted as a fragment of the tibial spine, supposedly fractured. At operation it was decided the hypertrophied and partly calcified external semilunar was responsible for the shadow. One plate in the other case gave evidence of slight arthritic changes which re-enforced our determination not to operate. Yet, when operation was later done at the insistence of the patient, a small fibro-cartilaginous tumor was found responsible for his symptoms. It is only just to say that another roentgenologist reported a negative X-ray, so it is probably better to classify this case with those showing negative plates. The remaining case in which there was a positive X-ray finding was one showing a calcified body in the joint, found at operation.

Thus it is seen that in nearly one-third of the cases the X-ray examination was a direct aid to diagnosis. With the use of oxygen or air inflation of the joint and then X-ray examination of the inflated joint, some writers state that positive evidence is furnished in nearly all cases of injured semilunar. But with this we have had no experience.

Differential Diagnosis

There are several conditions, giving rise to similar symptoms, which must be differentiated from internal derangements. Points of difference will be but briefly stated.

1. Ruptured or strained internal lateral ligament is usually due to a direct blow to outer side of knee. There is no history of locking, pain is usually over the femoral attachment of the ligament, and usually there are not recurrent attacks. But in the initial derangement it may accompany the injury to the internal semilunar.

2. Slipping tendon may give rise to symptoms of locking, but the lock is momentary and usually easily reduced. There is no effusion, usually no tenderness, usually no history of injury, and the X-ray may show an exostosis over which the tendon slips.

3. Early arthritis, tuberculous or of other type, is occasionally confused with internal derangement. This usually shows rather vague symptoms, as pain, stiffness, weakness in the knee, and some synovitis on over-use. The history usually does not suggest internal derangement and the examination may show grating, sometimes with muscular spasm. In more advanced arthritis, the X-ray is helpful.

4. Intra-articular fracture and fracture of the patella are diagnosed by the X-ray.

5. Recurrent dislocation of the patella, which complicated one case of this series, in which a joint mouse was removed, is often difficult to differentiate unless the surgeon sees the patella dislocated. The late John B. Murphy called especial attention to the difficulty sometimes found in making a diagnosis between it and internal derangement. As a rule, the quadriceps is lax and with the knee extended the patella may be pushed over the outer femoral ridge. Sometimes it is necessary to put the patient on exercises which may cause the dislocation where it may be observed.

With the diagnosis of internal derangement made, the question arises,—what is its cause?

As in the great majority of cases it is an injury to the internal semilunar cartilage, we have to exclude the other conditions next most common.

Loose body or joint mouse is positively diagnosed only when felt by the examiner's hand or revealed by the X-ray, but the latter practically always will show the loose body.[10]

Injury to the external semilunar cartilage, we believe, cannot frequently be positively distinguished from an internal semilunar injury. It may give rise to the same symptoms and even cause tenderness on the inner side of the joint, though, with it, tenderness is more common on the outer side. However, in Sir Robert Jones' vast experience, external semilunar injury is found in less than 8 per cent of internal derangements. In the four cases of our series which showed both semilunars injured, there was no symptom or sign which made this diagnosis evident before operation.

Ruptured anterior crucial ligament is usually due to more severe trauma. On examination of the knee in complete extension the tibia is found to slip forward on the femur. Sometimes the tibial spine is also fractured, which will be shown by the X-ray plate.

A fourth condition occasionally found is nipping of an enlarged retro-patellar fat pad. This usually causes transitory attacks of slight

pain with effusion, perhaps a dull ache behind the patella, and often there are slightly tender swellings about the patella tendon. Locking from this cause is rare.

In the fourteen cases of injured semilunars reported here, the diagnosis of injury to the internal semilunar was correctly made in all, but the additional diagnosis of injured external semilunar was not made in any of the four cases which showed this lesion also. Unfortunately, study of the records of these four patients has shown nothing in the pre-operative findings which would point to a method of making the additional diagnosis in future patients.

The most striking points in the history and in the examination of our sixteen cases were as follows:

History of injury to knee 100 per cent;
History of recurrent attacks 100 per cent;
History of effusion in the joint 94 per cent;
History of locking of the knee 69 per cent;
Limitation of motion on examination 62.5 per cent;
Tenderness over internal semilunar 43.7 per cent;
Average duration of symptoms 3 years 11 months.

Treatment

From the standpoint of the patient treatment is the most important thing in the discussion of any medical or surgical condition. It should be equally so from the standpoint of the physician. No matter how expert we may be as diagnosticians, it is by the success or failure of our treatment that we are judged by our patients.

As was remarked at the beginning of this paper, the treatment usually given at the initial derangement of the knee is faulty and inadequate. If it be adequate, recurrence of the trouble will probably be avoided in many of the cases. If the treatment be inadequate, recurrence is practically certain.

In the acute case a thorough examination, including an X-ray of the joint taken in two directions, should be made. If the diagnosis is made of an injury to the internal lateral ligament, the knee should be kept at rest extended for three weeks. If the joint be found locked, as is frequently the case with semilunar cartilage injuries, reduction should be attempted, without an anesthetic, in order to have the aid of the patient. The leg should be firmly but gently flexed on the thigh by the surgeon, at the same time internally rotating the foot as much as possible. Then, with the surgeon's hand pressing down on the patella, the patient should be instructed to kick out the leg as hard as possible. If the cartilage is completely reduced, the patient, and perhaps the surgeon, will feel something slip in the joint, and full active extension of the leg is found possible without any difficulty. If active extension still be limited, the cartilage is not reduced and another attempt must be made. After reduction, the knee should be immobilized in extension, either by a posterior splint or a plaster cast, for at least three weeks, and it is better not to bear weight on the affected extremity during this time. After this period, in cases of both internal lateral ligament injury and of internal semilunar injury, body weight should be deviated from the internal lateral ligament by raising the inner border of the heel of shoe 3/16 inch, for a period of several weeks longer. Because at the first injury, unless the knee is locked, it is practically impossible to decide between injury to the internal lateral ligament and the internal semilunar cartilage, it is fortunate that both require similar treatment.

In none of our cases had such treatment been instituted. The most common form of treatment was strapping the knee with adhesive plaster, only three cases being put to bed, two of these for two weeks and the other for one week. In one case only had there been a reduction of the dislocation cartilage by a physician and this treatment was vitiated by failure to immobilize the joint.

After the immobilization, baking and massage are indicated to restore the strength and tone of the quadriceps.

If the anterior crucial ligament be injured, either with or without fracture of the tibial spine, the knee should be immobilized in plaster for eight weeks, flexed 20° short of full extension, as this position takes the strain off the ligament. During this time, weight is not to be borne on the injured extremity.

If there is a loose body in the joint which causes the derangement, no method short of operation will relieve the condition. But the effusion and pain may be relieved by strapping the joint firmly with wide strips of adhesive plaster, best applied over a horse shoe shaped pad of felt surrounding the patella.

Operative Treatment.—If there are recurrent attacks of derangement of the knee, especially with locking, if reduction cannot be

accomplished, as was true in one case of our series, if there is loose body in the joint, then the only effective treatment is surgical.

We make it a rule in our suspected semilunar cases not to operate unless there has been a recurrence, with the exception of the case in which reduction cannot be accomplished. It is better, too, to follow the example of the abdominal surgeon in his operations on the appendix,—that is, to operate in the interval between attacks. The orthopedic surgeon can always do an interval operation on the knee, while the general surgeon is often forced to remove the appendix at the height of its inflammatory reaction. In four of our cases, the knee was opened while effusion was present, and these four showed the most marked postoperative reaction of the series. In two there was a slight serous discharge from the incision, with a temperature of 101° for several days, but there was no bacterial growth from a culture of this fluid, and the final result was excellent in both. It is more risky to operate on a knee containing fluid, with the soft tissues edematous and congested, and a little patience on the part of the patient and of the surgeon will give a much better field for operation.

Of course, the chief reason for exploring the knee joint in the patient with recurrent attacks of internal derangement is to relieve these attacks. But this is not not the only reason. Sir Robert Jones[8] reports two cases of injured internal semilunar cartilage who refused operation and later developed tuberculosis of the knee. Another case which refused operation showed after a few years a severe chronic hypertrophic arthritis of the knee. This complication was found in Case No. 11 of our series. Not infrequently recurrent injuries to the cartilage cause the formation of the so-called "cartilage tumor", a remarkable hypertrophy usually of the anterior portion of the meniscus. In five of our cases there was a marked hypertrophy of the injured cartilage; and in two of these the enlargement was sufficient to be called a cartilage tumor. Recurrent effusions in the joint stretch the ligaments and weaken them so much that, unless relieved, they may cause a weak and unstable knee joint which greatly interferes with activity. Thus, we see that failure to relieve the internal derangement may lead to even worse conditions than the intermittent periods of disability.

When the decision to operate is made, arthrotomy of the knee is to be approached with the utmost allegiance to the principles of asepsis and performed with the strictest of surgical technique. There is no margin of error permissible, for the synovial membrane cannot combat infection as does the peritoneum.

If possible, it is best to do these operations at the same hospital, so that the operating room staff may be one thoroughly familiar with the rigid technique necessary in exploring the knee, for any error of technique may result in a suppurative arthritis with a consequent ankylosis, or even death from pyemia.

The skin over the knee must be free from pimples and scales or any other lurking place for bacteria. The day before operating, the operative field, extending from well up on the thigh to the middle of the leg, should be shaved, scrubbed with green soap and water, washed with 70 per cent alcohol, and covered with a sterile dressing. At operation the field is painted with benzine or alcohol, followed by tincture of iodine. We have not found it necessary to make the incision through sterile gauze or rubber tissue, but after making the skin incision the knife is discarded and the skin walled off with gauze or towels. A second knife is used for the remainder of the operation. Just as necessary as the proper preparation of the patient is the rigid preparation of the operating team. Ten minutes spent in scrubbing is not lost time for the surgeon.

The incision varies with the surgeon. Most common is a lateral curved incision to the inner side of the patella, beginning a short distance above the joint line and at the tibial margin curving back to the anterior edge of the internal lateral ligament. In all of the cases reported herein, the patella-splitting incision was used. This begins about three inches above the patella in the midline, extending down over it and the patella tendon to just above the latter's insertion. The quadriceps tendon is split, the patella divided vertically with a saw, the patella tendon split and the capsule opened. The knee is then flexed and the halves of the patella retracted outward, giving a complete exposure of the joint. It is not my purpose to advocate this incision to the exclusion of others. It necessitates a longer convalescence than the lateral incision, with a hospitalization of about three weeks rather than two; usually there is more effusion fol-

lowing it than with the lateral incision. But it affords a perfect view of the joint and, when the diagnosis is questionable, this is an important point. It also makes it certain that cases of injuries to both cartilages are recognized. Recently, Krida, of New York,[11] has described a long vertical incision beginning four inches above the patella in line between rectus femoris and vastus internus muscles, which sweeps inwardly around the patella, about one-half inch from its inner border, then downward to tibial tubercle, just inside of the patella tendon. The knee is flexed, and the patella dislocated outward over the external condyle of femur. We have not used this incision, but it would seem to allow complete inspection of the joint and would not necessitate as long immobilization as is required when the patella is split.

Mitchiner,[9] in his report of 225 cases from St. Thomas's Hospital, London, concludes that the final results are better in those cases operated on by the transpatellar route, though it was immediately more painful and caused more effusion.

Whatever the incision used, when the joint is opened nothing should come in contact with it which has touched the hands. Sponges should be handled with forceps and all the work in the joint should be by instruments. The joint is carefully inspected and the pathology carefully noted. The injured semilunar cartilage is excised *in toto* or the loose bodies are removed. Although we do not use a tourniquet, it is rare that a ligature is required in the joint. Occasionally a few interrupted sutures of No. 00 catgut are taken to unite the synovia of the lower part of the joint; then the periosteum and ligament over the patella are sutured with No. 1 catgut, taking care to bring the fragments of the patella into exact apposition. The patella tendon, the quadriceps tendon, and the rectus femoris are sutured with No. 1 catgut, and the skin closed with equisitine. A plaster cast is then applied from the groin to the toes with the leg extended.

This was the procedure in all the cases reported herein, as in these the transpatellar route was used. The wound is dressed through a window in the plaster on the tenth day, the anterior half of plaster is removed on the fourteenth day, and the posterior half about the eigtheenth day. Active motion is then begun in the joint and the patient allowed up on crutches on the twenty-first day. Crutches are discarded a week later. Baking and massage for two to four weeks more are very beneficial, but many of our cases could not remain in the city for this, and were merely instructed as to exercise and allowed to go home.

As a rule, full and free use of the knee is not obtained for from four to six months after the operation. Mitchiner[9] says that slight effusion is likely to occur at times during the first two years after operation, and not until near the close of the third post-operative year is full benefit to be expected. This is not in accord with our experience, as after the first six months nearly all of our cases have had complete relief.

Results

In estimating the results in these sixteen cases, all but three were re-examined personally at a time ranging from six to eighteen months after the operation. The three cases not re-examined were sent a follow-up letter with several questions to answer, one of which was "In your opinion, was the operation a success?" This question also was asked of those seen personally.

The cases who have perfect function, are completely relieved of their previous complaint, who can take part in sports, and who feel that the operation was a success, we have grouped as excellent results.

If there is still some slight complaint, but the previous symptoms are relieved, we have classed these as good.

If there has been any recurrence, we have classed these as unimproved.

As fourteen of these sixteen cases were semilunar cartilage injuries, we shall consider these first.

The results in 12, or 85.7 per cent, of the cases are excellent. One of these cases reports that on severe exercises there is sometimes a slight "slipping" of the knee, but he plays tennis and golf as much as he wishes and feels that the operation was a complete success. It is interesting to note that this patient (Case No. 1) showed at operation some relaxation of the crucials and it is probably this that gives him his slight instability.

The remaining two cases are classed as good. One patient had suffered a severe trauma with injury to both cartilages. The internal was excised, but only the loose anterior half of the

external semilunar was removed. Perhaps it would have been wiser to have removed this cartilage *in toto*. The other good result is Case No. 15 examined five months after operation, when the only thing which prevented it from being graded as excellent was that full function had not yet returned. This case, a fireman, later returned to full duty, and should be classed as an excellent result. In both of these cases, in which excellent results were not obtained, there was some effusion at time of operation, with much periarticular thickenin .

In none of the semilunar cartilage injuries was there a case unimproved by operation.

In the four cases which had injuries to both semilunar cartilages, the results were excellent in three, while the fourth was the first case classed above as good. The one case with a definite injury to anterior crucial is completely relieved.

There were two cases of loose bodies in the knee joint. One of these (Case No. 11), also included under the semilunar cartilage group, obtained an excellent result. The second case is the only one of the sixteen which is classed as unimproved. It was possibly a mistake to operate on this patient. She was a neurotic woman who, in addition to the joint mouse, suffered from a recurrent dislocation of the patella. An operation for the relief of this condition was done later, but some months afterwards she developed a multiple infectious arthritis, and had so much pain in the knee that it was necessary to ankylose it. The arthritis was an entirely distinct process from her original trouble.

The remaining case of the sixteen is that with the chondro-fibroma of the knee joint. When this man was first seen we were so sure that his symptoms were caused by an early arthritis that we advised him against operation. He did not improve under anti-arthritic treatment and was so anxious to have his knee explored that we could no longer refuse to operate. At operation, what we took to be villi were seen coming off from the posterior part of the capsule. These were excised and we closed the knee, thinking our diagnosis was correct and that he suffered from villous arthritis. The pathologist reported the tissue as chondro-fibroma. The patient is completely relieved and thoroughly grateful. The lesson to be learned from this is,—do not fear to explore the knee, if other treatments fail.

In no case did infection occur.

The results in this small series of cases are about the same as in the larger series reviewed. Surls and Osgood[7] report 83.1 per cent very satisfactory, 3.9 per cent good, 1.3 per cent fair and 11.7 per cent poor. Mitchiner[9] reports 76.7 good, 19.2 per cent fair, 4 per cent unsatisfactory. Bristow[2], in end results on thirty-nine cases, reports 77 per cent good, 15 per cent fair, and 8 per cent unsatisfactory.

Undoubtedly, were these cases operated upon before so many recurrences, the results would be better. After repeated recurrences, the knee joint must be weakened and removal of the cause of the derangement alone cannot remedy all the pathology present.

Conclusions

1. Internal derangement of the knee is a fairly common condition in this country, though the incidence is not so great as in England.

2. The treatment of the primary derangement is usually inadequate and unsatisfactory. If correct, many of the cases will not recur.

3. If the derangement recurs, the operative treatment is usually necessary for relief, although manipulation and fixation may first be tried in semilunar injuries.

4. It is interesting to note that more than one-fourth of the cases in this report had injuries to both semilunar cartilages, while in other series reviewed, pathology of both has been rare.

5. Removal of both semilunar cartilages does not interfere with good function of the knee.

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Medical Arts Building.

THE FOURTH FUNDAMENTAL PRINCIPLE IN THE TREATMENT OF TUBERCULOSIS.*

By GERALD A. EZEKIEL, M. D., Richmond, Va.

The subject of this paper, "The Fourth Fundamental Principle in the Treatment of Tuberculosis" is a phase of the treament hitherto very much neglected. The three fundamental principles—rest, fresh air and proper feeding—have been taught until not only every tubercular patient knows them, but the general public, the world at large. Steady progress is being made in the treatment of tuberculosis, with numerous advances; still there are cases that do not recover, although doing well when they left the sanatorium.

Rest, fresh air and proper feeding are three essentials for the successful treatment of tuberculosis. To make the treatment more successful, I want to add a modifying statement or what I want to call the "fourth fundamental principle"—rest, fresh air and proper feeding, to be administered under the direction and care of a physician skilled in the management of tuberculosis.

I have been using this principle in my practice with, I have felt, sufficiently encouraging results to justify bringing it to the attention of a larger number of physicians. This idea is not new with me. It has been presented many times before in a different manner. Still it is not generally understood. I feel that a paper devoted to the elaboration of this idea, presenting it as one of the fundamental principles in treatment and urging that it be so taught, should be well worth while.

The average patient on leaving the sanatorium feels that he knows more about the treatment of tuberculosis than the average practicing physician. I fully realize that all of the cases cannot remain in the sanatorium long enough for a cure; that a large part of the work of the sanatorium is educational. This being the case, the acceptance of this doctrine and adding it to the fundamental principles taught in the sanatorium would be of value. I see many cases from a few months to a couple of years after they have left the sanatorium and find that during this time they have not consulted any physician and do not do so in the majority of cases until there is a relapse in their condition. Had these cases been properly supervised from the time of discharge, many of those discharged as arrested would be cured and those discharged with slight activity, probably arrested. In fact, untold good may be accomplished, as has happened in a case now under my care, discharged with the expectation that she would die, but now on the road to recovery with a fair chance of cure. This shows the need of a proper follow-up of the treatment started in the sanatorium, as results hardly to be hoped for may be secured.

In order to make these patients feel that it is worth while to be under the care and direction of a physician, we ourselves must become more familiar with the treatment and management of this class of patients. The physicians in charge of the sanatorium must recommend and urge a real follow-up treatment. They must teach the same principles—rest, fresh air and proper feeding—and that these remedies must be applied under the direction and care of a physician skilled in the management of tuberculosis. If this is done at the sanatorium, it will inspire confidence in the patient and lead to results that will make the sanatorium treatment more permanent and more effective. There is real need for this supervision of the patient after leaving the sanatorium. Failure in the past on the part of the physicians outside of the sanatorium to try to keep these patients reporting regularly has, I think, been partly due to reticence on the part of the physicians in having patients report for whom they seldom wrote prescriptions, but simply gave advice. This is wrong. Visits with proper encouragement being given if the patient is doing well, or to correct the trouble if losing, are needed.

I feel that a physician doing general work is a good one to look after the tubercular patient. The fact that a man has tuberculosis, or has had it, does not render him immune from all disease. These patients are subject to other diseases, and this must be borne in mind. When other diseases complicate tuberculosis, the general indications in treatment for the new condition with slight adjustment necessary to meet the tubercular situation can be administerd by the general practitioner, if he will only acquaint himself thoroughly with the diagnosis and treatment of tuberculosis. He is largely familiar with it. He can recognize tubercular complications as well as diagnose the original tuberculosis, which he often does. A good tubercular specialist must know

*Read by title before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15. Also read later before the Stuart Circle Clinic Club, December, 1926.

general medicine, so the good physician must know something of tuberculosis. Where assistance is needed in treatment or in determining the nature of a complication, it would be well to consult a tubercular specialist, just as the difficult or borderline cases are sent in to him in the first place for his diagnosis.

"Under the direction and care of a physician skilled in the management of tuberculosis" would have its good effect in that there would be a follow-up treatment in the home, and here I strike an important keynote. I have seen a few patients who cannot take sanatorium treatment. They do not possess the nervous make-up (temperament) for an institutional existence and can never adjust themselves to it. These patients do far better at home. The home is the place wherein the patient lives after discharge from the sanatorium, during the re-adjustment from institutional to home life; the period from arrested, or apparently cured, to cured, corresponds with this time. Regulation of the patient's life—rest, work, or exercise, and food—should be under the care of a physician.

I want to call atention to a few salient points, which may help the physicians doing this work. The general practitioner must school himself in patience, because in dealing with these patients he will find a type of nervousness such as chronic cases develop. The patients, too, must be taught patience. They must realize that a space of two years must pass from the time they are pronounced arrested, during which time they are doing their regular work or following their usual manner of life while remaining symptom free, before they can be pronounced cured. In this time also they need supervision. The patient must feel that the visits to the physician are complete. The examinations must be carefully made and due consideration given to the measures suggested. They must feel that the physician is interested in their welfare.

The physicians must not hesitate to give this service freely. They must recognize that next to the prevention of disease, preventing a relapse in those who have had tuberculosis or been ill, is likewise their duty. This is thoroughly in accord with the idea of modern public health work. The physicians of today, although they may be engaged in private practice, are always working in conjunction with public health officials, health organizations, and, in my opinion, physicians will be making another step in this direction by the furtherance of the doctrine of rest, fresh air and proper feeding under the direction and care of a physician skilled in the management of tuberculosis.

1652 *West Grace Street.*

THE EVOLUTION OF MEDICINE.*

By GEORGE A. CATON, M. D., New Bern, N. C.
President, Seaboard Medical Association of Virginia and North Carolina.

Fellows of the Seaboard Medical Association, Ladies and Gentlemen:

In casting over the waters for a subject which would be interesting to the lay mind as well as to physicians, I have chosen as my subject "The Evolution of Medicine."

There are books and articles running into thousands dealing with various phases of evolution as regards the vegetable and animal kingdoms, but as I see it, there is no more interesting thing than the evolution of medicine.

The constant striving, the self-sacrifice of physicians and surgeons, even to the point of martyrdom in innumerable instances, for the advancement of the healing art of their choice, and which sacrifice might conduce to the saving or prolongation of human life, constitutes one of the most important chapters and interesting phases of human endeavor.

About 3500 years ago the first prescription was written with a brush on stone, evidently for stomach disturbance of reflex origin, and quite likely for hyperacidity, as the symptoms described were "a ball in the throat." To this day this symptom is often recounted to gastro-enterologists and, upon examination, one finds hyperacidity.

Paleopathologists produce definite proof of the existence of syphilis and tuberculosis of bone tissue which existed thousands of years ago. Diseased processes are as old as life itself.

Distinct evidences of tumors are found in the Rock Chalk of Kansas; evidences of bacterial infection are found in the mummies of Egypt; so that diseases of the same types as exist today, we are quite certain, existed from the time that the earliest form of human organism existed on the earth.

The cave men suffered from gout and arthri-

*Address of the President delivered before the Seaboard Medical Association of Virginia and North Carolina at the thirty-first annual meeting at New Bern, N. C., December 7-9, 1926.

tis bringing about deformity of bones. In 3200 B. C., Pto Hateb advised his son to beware of sex dangers.

Hippocrates advised to cure first by medicine; if medicine fails, resort to the knife; if the knife fails to cure, then by fire, meaning, of course, the actual cautery.

The Hindus long before Christ operated extensively; they had numerous instruments and were regarded at that time to be skillful in the art of healing by surgical means.

Chinese early medicine is interesting on account of dry cupping and massage. Massage and cupping were in later periods practically ignored, but were revived as adjuncts to cure of various diseases in the eighteenth century. Today massage skillfully done has certainly a rightful place in the healing art, and has come to stay.

Medicine is divided into Pre-historic, Greek and Roman medicine, Mediaeval medicine, Physiologic medicine, Paracelsus medicine, Pasteur medicine and Scientific medicine.

The earliest physician of whom we have record lived 4500 years before Christ. This physician was a Greek and prescribed or administered opium, gentian, castor oil, etc.

It seems from what one can gather from ancient medical literature, that charms, incense, incantations, etc., were employed as a means of cure, by driving away disease which was in a large measure due to the existence of the evil spirit.

Later, there were witch doctors who were often burned at the stake—really, as a matter of fact, some were burned who had effected creditable cures. These were regarded as conjurers and were burned even at much later periods.

Scientific medicine may well be said to have begun in the time of Hippocrates, who was born on the island of Cos in the year 450 B. C. He lived in an age of great men and in a time when intellectual fortune seemed to have smiled on a group of his contemporaries. Such deep and earnest thinkers as Socrates, Plato and Herodotus were contemporaries of his.

From Hippocrates comes the aphorism that art is long and time is short and judgment difficult. Hippocrates had the true medical heart.

The greatest single contributor to scientific medicine in the renaissance period was Vesalius, a Belgian, a great anatomist and surgeon. This great man opened the chest of a nobleman for purposes of dissection, found his heart still beating, and in reparation, made a pilgrimage to the Holy Land, but was shipwrecked and perished on his return voyage.

It seems that the Italians have from early times held a dominant place among the nations, as is evidenced by there being so many anatomical structures named after their discovers.

In the 18th century great advances were made in medicine from 1700 to 1799. The circulation of the blood was discovered by Harvey during this period.

In 1842 ether was discovered by Crawford Long, who practiced in Jefferson Ga. Chloroform was discovered about this period, but the honors for the great discovery must be divided between France, Germany and America. Other anaesthetics, such as ethyl chloride, and local anaesthetics, as cocaine, procaine and so on, came at a later date.

It will be recalled that in the early days major operations were performed, but the patients were held by force or were securely strapped on the table.

William Hunter lived from 1718 to 1783. He was a great English physician and anatomist. William Hunter discovered the primary lesion of syphilis which is to this day called the Hunterian chancre.

In the eighteenth century much work was done in comparative anatomy and embryology, thereby laying the foundation for the later period when medicine would be placed on a higher plain of pure science.

Chemistry, general and physiologic, at this time began to take form on a basis conducive to the later period when intricate, physiological and metabolic problems could be solved. Pathological anatomy, also another advancement in laying the foundation for a better medicine, began to take form. Materia medica and therapeutics likewise came on the scene about this time.

In the nineteenth century cellular pathology was developed by Virchow. Some time later Pasteur laid the foundation for the study of microbic activity, this perhaps being the most far-reaching discovery in medicine. Psychiatry took form in this century and has since made wonderful strides, until at the present time it has a distinct field in the healing art

Ricord's influence just now became more or

less dominant in regard to venereal work, and he corrected some of Hunter's unfortunate mistakes.

Laennec solved the problem of the meaning of the different sounds in the chest, one of the greatest discoveries of this century, enabling physicians to diagnose pneumonia, tuberculosis, pleurisy, and so on. Laennec also did other valuable diagnostic work, gradually, as were others, bringing truth out of chaos, and evolving theories which were later proven to be facts. It was then, and now, regarded that Laennec was one of the great five or six wonderful medical men of modern times.

To Claud Bernard we are indebted for foundation knowledge of the functions of the ductless glands, that is the internal secretions.

In the first half of the nineteenth century Alexis St. Martin, a French Canadian, suffered from a gunshot wound, which left an opening in his stomach, through which the digestive processes could be observed. This was really the foundation for the scientific treatment of digestive diseases.

Claud Bernard was probably the greatest medical investigator of the nineteenth century. To him we owe the idea of internal secretion. He made investigations in internal medicine which challenge the pride of great internists even to this day. It was he who said, "When you enter the laboratory, put off your imagination as you would put off your overcoat, but put it on again as you would your overcoat when you leave the laboratory. Before the experiment and between whiles, let your imagination wrap you round; put it right away from you during your experiments, lest it hinder your observing power."

Claud Bernard was never a money maker—just devoted to science and the love of the healing art, a virtue that we should all cultivate.

Professor Paloff, of St. Petersburg, was great in scientific investigation as regards gastric and intestinal diseases. He, perhaps, has done more for the solution of pancreatic diseases than any man in the profession.

Pasteur showed that disease is not of spontaneous origin, but that disease originates from minute organisms, thus laying the foundation for a great revolution in medicine and surgery. Previous to this time infections of all kind were rife. When one died, for instance, of gangrene of the intestines, or was otherwise infected, it was simply called mortification—even in my recollection such causes of death were classed as mortification.

Now the profession recognizes gangrene or septicemia and the necessary surgical operation is done, and in many instances life is saved or prolonged.

The spleen is resected, the gall-bladder is removed, sections of the intestine are removed, and innumerable other life-saving operations are done, reflecting great credit to the profession of surgery.

Neurology has come into its own. Nerve grafting to revive muscular function is an established surgical fact. The lame are made to walk, the deaf are made to hear, the blind are made to see, thanks to modern scientific surgical development.

The great pioneer in neurology was a Frenchman, Duchenne, while the Germans have contributed invaluable work in neurological surgery and in medicine.

Sterilization of hands and instruments is of comparatively recent origin; listerism, however, has come to stay. No longer will a surgeon dare operate unless under the most careful aseptic precautions.

John B. Murphy, one of the great outstanding figures in surgery, has done wonders in placing the profession on the very high plane upon which American surgery rests today. The profession recognizes a great loss in his death.

With the growth of medicine and surgery has come, surprisingly, the amazing development of quackery and, strange as it may seem, the national, state and municipal governments have not taken cognizance of this, but have allowed it to grow rampant. The people have fallen for it. Really, the people have become ridiculous in regard to the various forms of quackery and charlatanism—I mean many of them intelligent people. Strange as it may seem, we have more than a hundred healing religions in this country without a vestige of scientific basis.

In New York, a man did a very good business with radio by curing people for one hundred dollars per treatment, though, when he was arrested, it was found that the wires were wrongly connected and one could not have heard a clap of thunder one mile away over it.

We have now arrived at the point in medi-

cine and surgery when we are on a ninety per cent scientific basis.

Smallpox, once the scourge of nations, has been robbed of its terrors; the death knell has been sung to this malady. Yellow fever has devasted communities and nations, but the deadly mosquito has sung her last tune.

Malaria, the sickening odor of which still lingers, the dread of all of us, and a material cause of lessened mental and commercial progress in tropical and semi-tropical countries, has been practically eliminated. Today we gloat over our victory of this dreaded disease and because untold thousands of lives have been spared. We must thank our great Benefactor for this great work as well as ourselves. We must also thank Him for smiling children, red-faced and mentally and physically fit, because of elimination of hookworm. The John D. Rockefeller Foundation has worked wonders in the Southern states.

Diphtheria has practically disappeared. We occasionally see a placard, but not so often. Formerly, entire families were wiped out and homes were made unhappy and miserable.

Typhoid fever and cholera and typhus, although once prevailing in the summer and fall months, are now comparatively rare. Surgery as regards pathological conditions resulting from these infectious diseases must become less often resorted to.

The average span of human life, due to scientific medicine and to the great advances in public health work, and, last, but not least, to the benefactions of great philanthropists, has been increased by ten years in the last half century.

Syphilitic bones and other tissue infections are disappearing. The terrible and disastrous results of this scourge, both mental and physical, will soon, in great measure, be an unknown quantity. Even tuberculosis, the great white plague, is now regarded as curable, whereas, formerly, it was regarded as an incurable disease. One could only hold up his hands and say that nothing could be done, it is only a matter of time. Tuberculosis in North Carolina, and especially in Eastern North Carolina, is not so very often seen. I have often wondered why greater advances have not been made in the development of especially equipped institutions for the treatment of this disease.

I believe Eastern North Carolina to be one of the greatest fields for sanatoria devoted to this particular field of medicine, because natural climatic conditions are here conducive to cure.

Just here I must commend the great constructive work done by the State Board of Health of North Carolina. Nothing could be said in eulogy of this great constructive health work which would be egotistic, because untold thousands of human lives have and will be saved. I am inclined to think, if this great constructive health program be followed, that our great and beloved state will soon be overpopulated, and that prospective physicians will take to farming and other fields of endeavor which will at least offer a probable prospect of decent support. The great productivity of soil and the wonderful fertility of our people must, of course, be considered.

Cancer, although its cause is not yet definitely known, is gradually yielding the mighty strength of her deadly tentacles and within a few years will doubtless be as docile as a little child when properly approached. The many thousand of lives lost annually will be saved. When this great achievement has been accomplished, the world will be glad, humanity will rejoice. One of the latest and greatest medico-surgical problems will have been solved.

Insulin, Banting's Triumph.—Only a short time since, F. S. Banting, with Prof. J. J. R. McLeod, of Toronto, Canada, was awarded the Nobel prize for the discovery of insulin. This preparation is used in the treatment of diabetes mellitus, and is one of the greatest discoveries in medicine of modern times. Now, a case of diabetes mellitus, properly dieted and with insulin administered as it should be, may live out his or her period of normal expectancy. No longer need one be so despondent or apprehensive as in years gone by. One may look the world in the face and fight on. Yet a physician must be careful in the administration of insulin. It is an exceedingly active protein, and one must take this into account, as well as the personal metabolism and the individual idiosyncracy.

In conclusion, I must add a word in behalf of our wonderful Rankin, who has been in charge of our health department for some years and who, by virtue of kindness of heart, was loaned to the great State of New York in 1925. To my mind, there has never been so

great a health executive in our good state as this man Rankin. State medicine, purely a constructive measure, has been revolutionized. Untold lives have and will be saved. Rankin, the great constructive health genius, is in a great measure responsible.

Duke University, one of the most, if not the most richly endowed university in the United States, is now one of the factors to be reckoned with nationally as regards constructive medicine. This great institution will go on in constructive medicine for ages and ages and men now unborn will eulogize this great benefactor for the relief of pain and illness and the saving of human life. Perhaps no greater man has lived in this Commonwealth.

THE DIFFERENTIATION OF NON-TUBERCULOUS PULMONARY INFECTION FROM TUBERCULOSIS.*

By C. L. HARRELL, M. D., Norfolk, Va.

Prior to the influenza epidemic of 1918-19, very little attention was being paid to non-tuberculous pulmonary infections, except to call them tuberculosis and treat them as such. My attention was first called to the subject by Dr. John B. Hawes, II, of Boston, while working in the Massachusetts General Hospital in the early part of the winter of 1919. Many cases were coming into his chest clinic with a previous diagnosis having been made of tuberculosis. The only symptoms were severe cough, expectoration, with signs in the base of the lungs, with a persistent negative sputum. To use his words, his job was to undiagnose tuberculosis.

There is no doubt in my mind at the present time but that many cases are being called tuberculosis that are not, and many cases of clinical tuberculosis are allowed to go unexamined without a correct diagnosis having been made. They go about the community untreated. This is my excuse for presenting this paper; to ask for a closer study on the part of physicians on those cases that present themselves for examination, for without close study a correct diagnosis cannot be made, nor the best results obtained.

For instance, a case comes in complaining of a hacking cough and tired weak feeling. He or she must have something radically wrong or they would not consult a physician. Because you have known and treated the family for years, you reply, "there is nothing wrong with you," give them some simple remedy and dismiss it. Now this case has, or will in the near future, develop pulmonary tuberculosis. You have not only caused him to lose his chance of a cure, but have done the community a great injury. On the other hand, a case consults you complaining of a very annoying productive cough. You make a casual examination of his chest and find many rales of various descriptions in the lower lobes of the lungs. You pronounce him tuberculous and send him to a sanatorium, his real trouble being a chronic bronchitis secondary to an upper respiratory infection. He will never get well of his bronchitis until the focus of infection is removed. You have not only placed a stigma on this individual that will probably last him throughout life, but you have put him to a great expense and a loss of time, both from his labor and from being restored to normal health.

Drs. Brown and Heise, in 1924, analyzed 2,000 cases that had been discharged from Trudeau Sanatorium from 1916 to 1923. Clinical pulmonary tuberculosis was found to exist in 1,725 cases. Non-clinical pulmonary tuberculosis in 11. The diagnosis remained somewhat in doubt in 61, and a negative diagnosis was made in 203. Drs. Brown and Stafford, of the Blue Ridge Sanatorium, analyzed 1,000 cases discharged from the sanatorium in the past three years. In 70 cases no tuberculosis was found. In 37 cases no chest pathology at all was found, 27 in adults and 10 in children. Thirty-three were due to non-tuberculous pulmonary infection. Having these facts in mind, I think we can review this subject with much benefit to all of us, for I have not one new thought to present.

For the sake of clearness, I will cite a typical case of early tuberculosis. The patient comes in complaining of a tired, run-down feeling, loss of energy, dry hacking cough, usually worse in the morning, rather rapid loss of weight. He may or may not give a history of hemoptysis or pain in the chest and across the shoulders. A careful history may bring out nervousness, digestive disturbance, restless nights, probably night sweats, a cough dating back several weeks, probably following a prolonged cold, with a slight sticky muco-purulent expectoration, a sense of heat

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or flushing in the cheeks in the afternoon, which they attribute to fever. Examination reveals a rather sickly, undernourished looking individual. Pulse usually from 90 to 120, temperature 99 to 100. Maximum usually reached late in afternoon between four and eight. Blood pressure systolic 100. Has usually dropped from five to ten pounds in weight in past two months. The gums are usually diseased and may show extensive pyorrhoea. The larynx has a blanched or anemic appearance and the patient gives a general appearance of being in poor health. The chest shows slight lagging of one apex with slight dullness to first or second rib in front and fifth dorsal spine in back. The breath sounds are harsh and expiration is prolonged over this area, with numerous fine and medium moist rales heard best at end of forced inspiration. On expiratory cough, showers of fine moist rales are heard bursting right under your stethoscope and spreading in all directions. They may be likened to a skyrocket bursting in the air at night. This type of rale is pretty characteristic of a tuberculous lesion. A sample of sputum collected in the early morning may show tubercle bacilli. By early morning, I mean something heavy and thick that is coughed up around five or six A. M. During the night there is always some exudate thrown off in the bronchi. That exudate collects low down in the throat and is usually coughed up early in the morning. If there are any bacilli to be found, they are usually in this sample. I also might state that a sample of sputum from these cases, as a rule, does not show much mixed infection. An X-ray of this case will probably show some peribronchial thickening radiating from the hilum zone to the periphery and into the apex, with some studding and density in the first interspace. This I consider a fair description of a typical early tuberculous case.

The first condition I wish to differentiate from tuberculosis is a post-influenza bronchitis. These cases usually complain of a rather severe cough, generally continuous throughout day and night, may be paroxysmal at times. Expectoration is usually rather profuse, thick and yellow. As a rule these patients do not look very sick. There is only a slight, if any, elevation of temperature and pulse, no loss of weight, and blood pressure is normal. The patient is very much concerned about this harassing cough. The mucous membrane of pharynx and larynx and trachea are very much injected and swollen. The veins at base of tongue are usually very much swollen. This redness and swelling may follow the mucous membrane all the way down to the small bronchi. Lord, in his recent book, states that this inflammatory swelling of the smaller bronchi may even lead to closure of the lumen and atelectasis of the corresponding pulmonary region. This inflammation may extend through the bronchi of both lungs or to one lobe only, or to a portion of a lobe. In other words, it may be bilateral or unilateral. It is usually bilateral in the acute disease, finally localizing itself in one lobe or a small section of a lobe, usually at the base in the latter stage. Examination of chest reveals no dullness, breaths sounds rather harsh over the non-affected part, due probably to an emphysematous condition, the results of coughing, with many medium and coarse and medium bubbling rales heard, both on inspiration and expiration, usually confined to the base of one lung. Several sputum examinations are negative for tubercle bacilli, but it is loaded with influenza bacteria, pneumococcus, streptococcus and many others. X-ray of this chest is usually negative. If the condition has been going on for some time, there may be some peribronchial thickening, extending from the hilum zone downward toward the base of the lung. The cough and physical signs of this condition may persist for several weeks, but usually clear up entirely. This is entirely different from the preceding case of tuberculosis. However, this type of case should be watched carefully, as it may cause a flare-up of an old tuberculous lesion. I never consider a sputum negative until at least three specimens have been examined. Some sanatoriums usually examine nine sputums.

The next condition which I will consider is chronic bronchitis, secondary to a nose and throat infection. This condition probably furnishes the largest class of cases we have to contend with in this section. These cases usually give a history of frequent colds, usually from four to five during a winter; some are never free. The infection is harbored somewhere in the accessory sinuses, or abscessed teeth or tonsils. Their resistance is low. The least change from the ordinary, such as loss of sleep, exposure to dampness or cold, will

cause a fresh cold or a re-infection. There is no doubt that an abscessed tooth can act as a focus of infection for the lung and bronchi, just the same as it does for a joint or a kidney. The same might be said of diseased tonsils and of the different sinuses. In the cases of nasal obstruction and sinus disease, there is a constant irritation in the throat from secretions or exudate which have accumulated on the post-pharyngeal wall. This infection usually drains through the lymphatics down to the glands of the chest, as the mediastinal glands, those of the lungs and bronchi. These glands hypertrophy, and through pressure and irritation produce a cough. There is a great collection of mucus and pus in the bronchi below the glands, producing stagnation. The mucous membrane is thick and indurated. There is cellular infiltration of all parts of the bronchial wall. The thickening and induration may extend to the peribronchi and neighboring pulmonary tissue, according to the chronicity of the disease. Usually, each acute cold will cause these already enlarged glands to swell up and more mucus and pus accumulate in the bronchi as the result of pressure and irritation. I might say that this type of cold is not usually contagious. They seem confined only to the individual. During an acute attack these patients usually have a very severe cough and raise a good deal of muco-purulent sputum. The cough, at times, may be very severe and become asthmatic. I have seen many cases of real bronchial asthma, following chronic infection in the ethmoid and antrum. A cough, both in the preceding condition and the chronic bronchitis, is usually very much aggravated by all forms of dust and smoke, especially by smoke from smouldering cigarette stumps, cigar stumps and burning grease from the kitchen. I have also noticed the dust on old books is very aggravating to the mucous membranes of the nose and throat.

These patients complain of numerous, but rather indefinite, chest pains. In the region of the pain the skin is generally sensitive to pressure. Evidently they are muscular pains. The sputum is heavy and thick and contains all kinds of bacteria, but no tubercle bacilli. The pulse and temperature are usually normal, that is between acute attacks. Blood pressure normal. No loss of weight. The patient as a rule looks well, and is well except for the frequent colds and the cough produced by the attacks.

The chest is well developed, and is resonant or hyper-resonant throughout. The breath sounds are very harsh and expiration prolonged over the entire back of both lungs, with many coarse and squeaking rales heard over the back, increasing in intensity as one approaches the base . The X-ray finding in this type of case is usually negative, or nothing suggestive of a density that is seen in tuberculous conditions.

Treating this type of case without first removing the focus of infection is of no avail. Cleaning up the nose and throat, changing to a dry climate, rest and nourishing food is probably the best kind of treatment. Sometimes, an autogenous vaccine helps to raise their resistance. The type of vaccine that I use is made according to the technique of Solis Myer Cohen, of Philadelphia. This is grown on the patient's own blood serum. He claims it is the only way you can get a growth of an organism that is pathogenic to the individual. This type of case seldom, if ever, develops into tuberculosis, but many of them are classified as such. However, many of them do carry a chronic cough and many of them develop into asthmatics. It is necessary to search diligently for the focus of infection whether it be teeth, tonsils or accessory sinuses, and rid the patient of same.

I have been referring chiefly to adults, but you get a similar condition in children, both in white and colored, but rarely in the colored adult. Why this difference, I do not know.

In the first case cited, a typical case of tuberculosis, the lesion was found at the apex, and this is usually the case in tuberculosis. In the last two conditions, the post-influenza and chronic bronchitis, the physical signs are confined entirely to the base or lower lobes of the lung. One would conclude that tuberculosis originates at the apices, while non-tuberculous infections are confined to the base, although sometimes the exact reverse is true. I recently had two cases where the primary lesion appeared to be in the lower right lobe, that proved to be tuberculous. Dr. Watson reports 500 cases from Mount Regis Sanatorium in which he has found 12 cases with primary lesion at base of lung. Dr. Nicholls states that of 3,000 cases discharged from Catawba Sanatorium, there were 26 cases of primary bas

tuberculous lesion, 8 non-tuberculous basal lesions, and one questionable. Dr. Stafford analyzed 1,000 cases at Blue Ridge Sanatorium and found two basal primary lesions. In a recent correspondence he has found two more, making four. Other authorities claim that they are rare, but, when found, are usually more grave on account of poor drainage. All advised pneumothorax from beginning. make it a rule never to diagnose a lesion the base of a lung tuberculous without a positive sputum, regardless of physical signs or X-ray findings.

On account of the anatomic relationship between the lungs and the pleura, one would never think of infection of one without associating it with the other, yet we have many cases of acute pleurisy, or pleurisy with effusion, where the lung does not seem to be involved. An infection in one is almost of necessity compelled to spread to the other. Often, the acute inflammation makes its first appearance in the pleura; from there it makes its way through the lymphatics to the lung. The exact cause of pleurisy is a moot question. Many believe all attacks of real pleurisy to be tuberculous. The writer thinks that an attack of pleurisy is often produced by the starting up of an old infection in the mouth and upper respiratory tract, as extracting abscessed teeth or removing of diseased tonsils. All advanced cases of tuberculosis and many acute cases are accompanied with pleurisy, but all attacks of pleurisy are not by any means tuberculous. An acute attack of pleurisy usually makes its appearance with an acute pain in the chest in the region of nipple and extending around towards the axillae and back, made worse by deep breathing or any movement of the intercostal muscles. With the pain we usually have a slight cough and rise of temperature. Often no physical signs are heard at all or you may get a few sticky rales or a friction rub. If during an attack of pleurisy there is a sudden cessation of pain, you may rest assured that fluid is beginning to accumulate. If the aspirated fluid is clear and negative to culture it is usually considered tuberculous. If cloudy and a growth is obtained on culture, it is usually considered non-tuberculous.

It is the writer's opinion that every attack of pleurisy accompanied with rapid pulse, rise of temperature to 100 or more and lasting over a week should be handled as a tuberculous case. All cases of pleurisy with effusion should be treated as an active tuberculous case until proven otherwise. Various authors state that from 40 to 60% of cases of pleurisy with effusion, even though no pathology is detected in the lungs, either die or develop pulmonary tuberculosis within six years.

Many cases of unresolved pneumonia present puzzling problems. It is true that many cases of tuberculosis may be traced directly to a severe attack of pneumonia, which may cause a flare-up of an old tuberculous lesion. This may be the source of many of our lesions found in the lower lobe. It is equally true that you may have an unresolved pneumonia in the upper lobe or lower lobe, with a cough, some expectoration, slight elevation of temperature, with physical signs, slight dullness and rales, and will even cast a shadow under the X-ray, with a persistent negative sputum, that are not tuberculous. Many of these cases may run on for months and finally clear up entirely, but they should be kept under very close observation with frequent examinations of sputum.

Abscess of the lung is usually caused by inspiring foreign bodies of septic material during operation about the mouth or nasopharynx. Jackson reports several cases where teeth were removed from a bronchus following tonsillar operations under general anesthesia. One gets a history of cough, pain in chest, rise of temperature, coming on five or ten days following operation. In from ten days to two weeks they begin to raise a foul smelling sputum which is negative for tubercle bacilli. In the early stage the physical signs are practically nil. You may get some slight dullness with diminished breath sounds over the part of the lung that is blocked off. When suppuration and softening take place you get more dullness and numerous medium moist rales over the affected part. An X-ray casts a shadow of a consolidated area in the lung. This should not be mistaken for tuberculosis, but it very often is. Careful history, with the location of the lesion and a negative sputum should be sufficient to clear up the diagnosis.

Pulmonary infarct may be classed under abscess of the lung. This is usually caused by a small quantity of septic material lodging in a bronchus or blood stream. It is usually followed by acute pain in the chest. In about twenty-four hours there is a sudden rise of

temperature, severe paroxysmal cough and they usually raise pure red blood. There is an area of dullness over the region of the pain, with a greatly diminished or absent breath sounds, due to atelectasis. If the embolus be of septic material a lung abscess usually develops and they will begin to cough up foul smelling pus in five to ten days. I have recently seen two such cases: one in the lower lobe of the right lung, following phlebitis and treated by pneumothorax, the other in the upper lobe of right lung following tonsillectomy under general anesthesia. This went on to suppuration, but healed spontaneously.

Bronchiectasis, or dilatation of one or more bronchi, is a chronic condition accompanying other chronic diseases, as chronic bronchitis, old cases of tuberculosis or syphilis of the lung. These cases should not be mistaken for active tuberculosis, but they very often are. The patients, as a rule, are in fairly good health, but they have this chronic cough and raise a thick sputum, and of course they are worried about the cough. It is a very difficult condition to diagnose. The cough is usually of long standing, worse in the winter months and usually occurs in paroxysms. They may have two or three attacks a day, as the cavity fills with mucus and pus and has to be emptied. After the cavity is emptied there is practically no more cough until it refills. The physical signs vary according to whether the cavity is emptied or filled. A constant negative sputum and the physical signs are entirely different from that of tuberculosis, and all of them usually have club fingers. The X-ray picture is usually fairly characteristic. These should help to rule out tuberculosis.

Primary cancer of pleura and lung is very rare. Lord reports that of 4,704 cases autopsied at Massachusetts General Hospital, only two cases of primary cancer of the pleura were found. Of the lung and bronchi it is a little more frequent, about one in every 500 sections. Another author reports of a thousand malignant tumors, 1.6 were primary in the lung. I have seen three cases this year, one primary in the bronchus, by section, another clinically originated in the mediastanial gland, and the other in the pleura. The symptoms in the early stage are a non-productive cough, pain in the chest, usually confined to the lower back, and dypsnoea. As the mass increases in size, the cough and pain grow worse and almost continuous, due to pressure on the nerves and bronchi. There are no characteristic physical signs in this condition, but it will be the same as that found over any solid mass or tumor in the lung. You get a dullness or a flat note, according to the size, absence of breath sounds over the tumor with a hyper-resonant note above the tumor with emphysematous breathing. You usually do get numerous coarse rales and squeaks below the mass. There is a great collection of mucus and pus in the bronchi, due to pressure. Aspiration of the pleural cavity frequently yields a bloody fluid. An X-ray of this condition is fairly characteristic and should never be neglected.

Syphilis of the lung, *per se*, is exceedingly rare. I have seen only one or two cases. It often accompanies other lung conditions, especially tuberculosis, and is rather prevalent in the nego race. Persons with a lung condition with a four plus Wassermann, should be given anti-syphilitic treatment even though they have tuberculosis. The tuberculous lesion will not respond to treatment until the syphilis is first treated. There are no characteristic physical signs or X-ray findings in syphilis of the lung. I have noticed, however, where there was a bunch of enlarged glands around the hilus, which you get in syphilitic conditions, you get a dry whistling rale, heard on inspiration only. I contribute this to pressure of the glands on the bronchus. The air has difficulty in entering the lungs. Once there, it seems to be expired fairly easily. This is the exact opposite of asthma, though the patient complains of dypsnoea, which he calls asthma. When the glands increase to the extent that they cause a collection of mucus and pus below this area in the lung, then you would get the coarse bubbling rales as of chronic bronchitis, and this may cast a shadow similar to that of abscess of the lung.

After all is said and done, there will be times when your history, physical examination and laboratory findings do not agree. It is then you will have to bring into play your clinical acumen and decide whether this case or that case is tuberculous. Often one will find that his first impression is the safest one.

In conclusion, may I emphasize just a few points. First: In the early case of tuberculosis, the outstanding symptoms are general weakness or asthenia, a dry, hacking cough,

worse in the morning, rapid pulse, loss of weight, afternoon temperature, with a low blood pressure. I have never seen a hypertension in an active case of tuberculosis. The physical signs in this condition are very few and are usually located at an apex. Second: In the non-tuberculous pulmonary infections the patient looks to be in fairly good health, with a rather distressing or annoying productive cough, very little if any loss of weight. Pulse and temperature usually about normal, with a normal blood pressure. The physical signs are out of all proportion to the symptoms, and are usually located in the lower lobes of the lung. Third: A focus of infection in the accessory sinuses or mouth may produce a secondary infection of the lung just as much so as in a joint or any other organ of the body.

I wish to extend thanks to Dr. J. B. Nicholls, of Catawba Sanatorium; Dr. E. E. Watson, of Mt. Regis Sanatorium; Drs. W. E. Brown and J. B. Stafford, of Blue Ridge Sanatorium, for sending me the above statistics.

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Medical Arts Building.

SOME OCULAR FINDINGS OF IMPORTANCE TO GENERAL PHYSICIANS AND SURGEONS.*

By L. O. MAULDIN, M. D., Greenville, S. C.

Of course, practically everything connected with the eye is of interest to all physicians, but there are a few things I wish to bring to your attention this evening which have occurred from time to time in the scope of my work and which I believe have been of great interest and importance to the general men who have been connected with the particular cases under observation.

I do not wish to confine my observations on any case to the narrow limitations of vision that an expert might see through the mere hole of the reflecting mirror of his ophthalmoscope; for this, while important, is not the only thing connected with the study of the eye that enables one to do his full duty as an oculist and that broadens his field of usefulness in his chosen line of work.

In dealing with cases in this paper, I do not wish to speak of them specifically, but wish to speak of them in a general way, pointing to the salient facts standing out conspicuously in memory's vision as those that would naturally be of most importance to any physician who might have the particular case under observation.

The findings that come under the range of the heading of this paper are due to malignancies, septic processes, arterio-sclerotic changes, toxic absorption and injuries.

MALIGNANCIES

About fifteen years ago a physician of a nearby town brought his twelve year old son to me, referred by another oculist of this city, for examination and diagnosis of a peculiar condition in the left eye. The pupil was dilated and re-acted slightly to light; there was also slight, dull pain with increased tension and loss of vision of the affected eye. On ophthalmoscopic examination, we found on the temporal half of the fundus about midway between the periphery and the optic disc a distinct protrusion, apparently from the choroidal membrane, pushing the retina down into the vitreous. We watched this protrusion for several days and upon the history of the rapid growth and its appearance—especially the general malignant picture under the ophthalmoscope—we diagnosed "sarcoma of the choroid" and advised immediate enucleation of the eye. Further consultation was sought in the city of Atlanta by the child's father and the same advice was obtained. We enucleated the eye and clipped the optic nerve far back. A microscopic examination was made and the growth was found to be a sarcoma which originated in the choroid as a base. The patient healed normally and got well without any metastatic occurrences.

A few years after that another boy was brought to me about a hardened growth in the upper lid of his right eye which started about a year before when a calf with which he was playing threw up his head and caught the boy with its horn under the upper lid and upper part of the orbit, severely bruising the same without materially affecting the eye at the time. When brought to me the child was five years old and this was about a year after the

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accident. At this time there was nothing to be seen but this hardened tumor-like mass beneath the upper lid. It extended back into the orbit above the eye and apparently involved the tunic, seemingly being a thing apart from the lid or eyeball itself. The vision of both eyes was normal and there were no changes observable in the fundus of either eye.

As the tumor was growing of late, I was consulted. I decided to give the child an anesthetic and remove the tumor. I succeeded in removing a portion of the tumor but found that it went so far back into the cavity of the orbit it could not be completely removed without injury to the eye, so decided to send the portion removed to Hopkins for microscopic examination. The report came back, "mixed cell sarcoma". I advised, therefore, complete exenteration of the orbit. This I did, and the little fellow's orbit healed beautifully. This was at a time before X-ray or radium were available for treatment purposes in this part of the country, so I was unable to follow up my surgery with these valuable aids. The child went back to his home in the mountains and I never saw him any more, but was told that a few months afterwards a growth began to appear in the orbital cavity and that the child lingered along with this growth gradually enlarging until it eventually became a tumefied mass almost as large as the child's own head and literally sweated blood. The child died in six months from the time of operation. This case is one of the nightmares of my oculistic career, and I verily believe that under present day methods of treatment, especially with the follow-up of X-ray or radium treatments, the tumor might have been completely destroyed or at least could have been rendered less painful and perhaps life could have been prolonged with more comfort.

Another case that occurred the following year was that of a three year old girl who was brought to me with distinct evidence of an orbital tumor pushing the left eye forward and downward. On account of stretching of the optic nerve, it showed signs of inflammation in the disc—observable on ophthalmoscopy. No other intra-ocular changes were observable. The eye was blind at the time of examination. With the case of the boy just mentioned still lingering in my memory, I sought consultation, and exenteration of the orbital contents was decided upon as the only hope of saving the child's life. I did a thorough exenteration. The child's orbit apparently healed in about three weeks, but a tumor soon started in this orbital cavity and in three months' time a tumor, sweating blood, was growing out on the side from the orbit as large as a big grapefruit. This case was another nightmare. The tumor was also diagnosed at Hopkins as a mixed cell sarcoma. No follow-up treatment in this case was to be had to destroy the growth.

I do not regard it as being true to science to be always reporting our successful cases and leaving off those with which we are unsuccessful; therefore, I have endeavored to give you a knowledge of these two very unsuccessful cases with the hope that I may be able to deduce from them a few emphatic facts worthy of your consideration.

I wish to say that I have on record other cases of malignancy where the tumor has been confined to membranes of the eyeball, such as the iris or choroid, and enucleation of the eye having been done promptly, the patients got well and staid so.

My observation of the foregoing cases is that where malignancy is confined to the eyeball itself, without the extraneous tissue outside of the orbit being involved, early enucleation cures the patient.

That is Fact No. 1; and Fact No. 2 is that, if the orbital structure outside of the eyeball is involved with malignant growth, the growth has usually definitely become too far advanced before a diagnosis of malignancy is made to warrant one in taking steps to establish a permanent cure. The lymphatics are usually involved before a diagnosis of malignancy is made, and this shows that metastasis has become pretty deep. Fact No. 3, which is important, is that all operations about the orbit for malignancy should be followed up by radium or X-ray treatments in the hands of a man competent to give them. Fact No. 4 is that, after operation for malignancy, we must not let apparently healthy healing of the site of operation lull us into a false sense of security about the ultimate outcome of the case.

Septic Processes

Seventeen years ago when I was taking postgraduate work in some of the London Hospitals and a few years later in the New York Hospitals, little was said about septic processes as a factor in the cause of many ocular diseases. In the past ten years even, many things have

been developed as scientific facts about sepsis and we have had to learn some things over. We have learned a great deal about septic foci of infection, and it is a generally conceded fact that we have had to learn over the tonsil operation. In like manner, we have had to learn over some of our "look-wise" and "talk-wise" knowledge about auto-intoxication. We have had to learn something new about focal infection and, in like manner "get wise" on acidosis.

The trend of medical thought is constantly changing. This, no doubt, is a healthy sign, especially when it is always changing with an advancing stride.

Fifteen years ago iritis was said to be of rheumatic, syphilitic, or traumatic origin, and some of the smartest men and greatest teachers on the eye in London went so far as to advance the idea that all iritis had a background of gonorrheal rheumatism. Today nearly every oculist living who was practicing at that time can tell you emphatically that he has treated hundreds of cases of iritis and uveitis that was due to sepsis in the gums, alveolar processes, tonsils, sinuses, gall-bladder, prostate, seminal vesicles, etc. Some of our cases of optic neuritis also come from septic processes. Some of the cases of phlyctenular keratitis and conjunctivitis in poorly nourished children are directly traceable to septic processes of the gums or lymphoid tissue of the throat. Some cases of glaucoma in the aged are directly due to septic gums and decayed teeth.

The time has come when the medical profession has learned a few things well and one of these things is that rheumatism is caused by septic processes and that many allied eye diseases of rheumatic origin may be completely cured by well directed treatment in conjunction with the cleaning up of the septic foci of infection.

Last month I treated a man forty years old who came to me with a history of rheumatism dating back some six months and without previous attacks. He was still limping at the time of consultation. He came to consult me about his eye. The eye showed intense redness over the ball, deep ciliary injection at the cornea, pupil contracted, tension normal, great lachrymation, intense photophobia and, in fact, practically all the classical symptoms of iritis. Dilatation of the pupil was difficult and, when done, showed areas on the anterior capsule of the crystalline lens where the iris had been adhered. The adhesions were broken with difficulty as the atropine instilled acted on the fibres of the iris.

The underlying facts in this case were that this patient had quite a number of decayed teeth at the time of first examination, around which the gums were spongy and an exudate of pus could be seen coming from the margins and from some a distinct exudate could be squeezed. I insisted on certain teeth being extracted and on the gums being cleaned thoroughly. When this was done, the patient began to get better of both the rheumatism and the iritis. Of course, I treated the iritis coincidently with renovation of the gums, but the patient would not have been definitely cured had he not had his gums attended to. I can cite cases of this character that occur very frequently, but this, in particular, illustrates and is sufficient for the purpose.

In the fall of 1921 a man, aged seventy-three, came to me with one eye almost blind and with the other getting nearly as bad. Examination showed increased tension in both, more marked in the left or worst eye. There was a glaucomatous cupping of the left eye disc and a slight cupping of the right disc. The cupping in the left disc from prolonged pressure had this part of the optic nerve almost atrophic and pale as it could be. Patient's blood pressure was 140 systolic and 80 diastolic. Wassermann was negative. His throat was clear of disease but he had about a dozen bad teeth in his mouth, some of which were loose and almost ready to drop out, and an exudate of pus-like material oozing from around all the teeth, especially the loose ones. I prescribed muriate of pilocarpine for eye drops and directed a cleaning up of the gums and teeth before doing an iridectomy. The patient went to the hospital and had all his teeth extracted, the gums curetted where necessary, and used the pilocarpine drops. In two weeks he noted a decided improvement in his best eye and all the inflammatory symptoms had cleared in both and the tension was decidedly lower. He was soon able to see well with his right eye and the left had improved to such an extent as an impaired optic nerve would allow it. No operation (iridectomy or trephine) seemed to be necessary, and the patient was still improving when I had a chance to see him recently. Vision in right eye is practically normal and tension in both is normal. Thus,

by virtue of relieving the focal infection, the patient has been cured of a severe and blinding disease.

I have on record a number of cases of phlyctenular keratitis and conjunctivitis in children whose tonsils and adenoids have been removed as septic processes, and the eye diseases have cleared up and remained cured.

Under this heading many other cases should be placed, including gonorrheal conjunctivitis, but there is nothing out of the usual trend in these cases as to treatment and results. Before hastening on to the next subject, I must stress the importance of prophylaxis in the new born.

Arterio-Sclerotic Changes

The eye is frequently the first organ of the body to show beginning arterio-sclerotic changes in the general system. The blurring of vision, usually bilateral, the tortuous arteries of the retina, the flamed-shaped hemorrhages along these arteries, the stellate macula, and the choked disc, tell in no uncertain language that serious kidney disease is present and that arterio-sceloris is far advanced. The boggy retina at periphery, with hemorrhages not along the arteries, but between the vessels, with muddy vitreous, is very suggestive of diabetic retinitis and indicates a diabetes of long standing. The optic neuritis and low grade retinitis is very suggestive of syphilis or a syphilitic toxemia.

Many are the cases in which the ocular findings have absolutely diagnosed Bright's disease; cardio-renal disease with high blood pressure, diabetes, syphilis, etc., have added some very important links to the chain of symptoms that were necessary for a diagnosis to be made.

Toxic Absorption

Whatever may be the cause of encephalitis lethargica (sleeping sickness) I would like to speak of two cases of this disease in connection with my eye work, under the head of toxic absorption.

A young business man whom I had previously treated and fitted to glasses came to me one day last year complaining of double vision. As I had seen the patient and examined his eyes before and corrected a small refractive error (hypermetropia) about a year previously and was certain at that time there was no muscular ambulance, I immediately became suspicious of a central nervous lesion. I found no disturbance in the eye grounds at the time of this examination, but advised him to give his eyes rest for twenty-four hours (for he had been working them hard) and to return for further examination. He returned the next day and seemed greatly concerned about his eyes but little concerned about himself. While testing his eyes for his diplopia it was necessary to ask him a few questions, when he would look as though dreaming and answer a moment later. This showed me distinctly that his case should be studied from many angles and not altogether from the standpoint of his eyes. He went to an internist and from there to Baltimore for treatment for sleeping sickness. I believe that the first symptom in this case of encephalitis lethargica was the bilateral diplopia.

I have on record another case of encephalitis lethargica in a young married woman in whom the disease first manifested itself by a diplopia. The disease is four years past. The patient always had a high degree of hypermetropia with high astigmatism, but there were no ocular changes suggestive of a brain lesion.

It is interesting to note that these two cases started with a diplopia.

Intestinal toxaemia is responsible for many of the vitreous opacities called by the physician "muscae volitantes" and called by the patient "liver spots." It is not wise to consider these spots lightly, for frequently there is a background of syphilis from which they may arise.

Injuries

Fracture at the base of the brain is frequently manifested by a subconjunctival hemorrhage, optic nerve irritation or choked disc, irregularity of the pupils, and sometimes nystagmus. Experience has clearly demonstrated to me that it is worth while, yea, important, to look for these things in all cases of injury about the head.

The South Carolina State Medical Association,

At its meeting held recently, elected Dr. D. Lesesne Smith, of Spartanburg, president, and decided to hold the next annual meeting in Columbia in April, 1928. Dr. E. A. Hines, of Seneca, was re-elected secretary-treasurer for his eighteenth consecutive term.

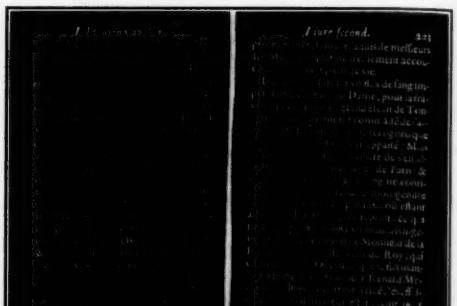
Bibliotheca Obstetrica

Jacques Guillemeau.

Guillemeau, Jacques, [1550-1612] De la grossesse et accouchement des femmes. Du gouvernment d'icelles et moyen de survenir aux accidents qui leur arrivent, Ensemble de la nourriture des enfens. Reveu et augmenté de figures en taille douce, et de plusieurs maladies secrettes. Avec un traitté de l'impuissance par Charles Guillemeau, 9 p. 1, 1049 pp., 30 l. 12° *Paris, A Pacard*, 1620.

Jacques Guillemeau was a pupil of Riolan,[1] Courtin[2] and Ambroise Paré. He was especially attached to Paré, and for many years lived in Paré's house and, like Paré, became an Army Surgeon and, later, "premier Chirurgien du Roy." Unlike Paré, however, he had a good classical education and was familiar with the works of Hippocrates, Celsus and Galen. Guillemeau's first publication was a translation into Latin of Paré's Treatise on Surgery (Paris, 1582).

His "Traité des Maladies de l'oeil" was translated into English, German and Dutch. The Army Medical Library catalogues the following editions of this work: Paris, 1585; Dordrecht, 1597; London, 1662; Amsterdam, 1678; Dresden, 1706; Dresden, 1710. In obstetrics Guillemeau followed his master's teaching, developing the operation of version and accouchement forcé, and, in 1599, by a strange coincidence was able by this operation to save the life of Paré's daughter when she was taken with a severe ante-partum hemorrhage. Our interest in Guillemeau's writings is that he definitely fixes on Paré the credit of accouchement forcé which otherwise would have gone to Louise Bourgeois who, in her book published in 1609, claims to have originated this operation. She says, however, that she did not use the operation prior to 1602. Guillemeau, on the other hand, says that he had seen Paré and Hubert induce labor in these cases as early as 1584. Paré makes no mention of the operation and this seems strange to us nowadays who are so eager to rush into print with anything that has the least tinge of novelty. The style of medical literature in the 16th and 17th centuries was entirely different, running rather to controversies and the reciting of cures, but with precious little details as to procedures. Paré, for instance, talks of delivering live infants by version, something entirely new in the



world, as he had seen his brother barber surgeons, Thierry de Héry and Nicole Lambert, do. And Guillemeau tells of delivering placenta previa cases by manual dilatation of the cervix and version as was taught him by Paré. The reader is left to judge of the technic solely by the results reported.

Charles Guillemeau, the co-author, was a son of Jacques. He was born in Paris in 1588 and died in 1656. He was at one time *premier chirurgien du roi*, but later gave up surgery to become a doctor in medicine. He is commended by Guy Patin for his stand against the Arabian pharmacy. Patin seems to have been very fond of him and dedicated to him a collection of discourses that he edited. Yet he quotes the King to the effect that Guillemeau was a wily courtier, who greatly desired to make a fortune.

M. P. R.

1. Riolan was professor of anatomy, but is chiefly remembered because he ridiculed the election of Pare to the College of Master Surgeons, and opposed Harvey's new idea concerning the circulation of the blood.

2. Germain Courtin lectured on surgery in the Faculty of Medicine of Paris.

Correspondence

Dental Program "Put Over" for School Children.

Athens, Ga.
May 16, 1927.

To the Editor:

No doubt, you will be interested in knowing that we can boast of having the first city in the world, that has had a 100 per cent dental correction program completed among the white public schools. A week ago the last of the Athens schools went "over the top".

At the beginning of the year the Dentists, the Department of Education, and the Department of Health held a conference to discuss this plan in general. The School Board voted a holiday to the school that secured 100 per cent correction.

A card stating that the child needed no dental work or that all necessary dental work had been done, was printed and given to each pupil for the signature of his dentist.

Talks were made and literature distributed by the health workers in the schools, clubs and churches. Each teacher wrote on the board the name of each child as he brought back his dental certificate. When 90 per cent of the children in a school were on the corrected list and a holiday was so nearly in sight the other 10 per cent had to fall in line for self protection. The dentists, of course, did much charity work or work below their regular prices.

In any place where the Dentists, the Department of Education, and the Department of Health unite, this campaign can be easily put across, and we hope some Virginia city will put this program across next year.

B. B. Bagby, M. D.,
Health Commissioner.

Woman's Auxiliary, Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

Report of Washington Meeting.

The Woman's Auxiliary was greatly encouraged at the meeting of the American Medical Association in Washington, on May 16th to 20th. Not only has the Auxiliary won the approval of the House of Delegates of the A. M. A., but there came complimentary remarks voluntarily from them on various occasions. At one meeting of the delegates, the speaker said "The Woman's Auxiliary has rendered valuable service to the A. M. A. in bringing the medical profession together and causing them to organize medical societies throughout the United States."

The editor of *Hygeia* was most grateful and complimentary to the Auxiliary for its work in the circulation of the A. M. A.'s health magazines, *Hygeia* and *Happy Land.*

Mrs. John Oliver McReynolds, of Dallas, Texas, president of the Woman's Auxiliary and her official family were invited to appear before the A. M. A. House of Delegates and were received with a great deal of enthusiasm. There was much applause when Mrs. McReynolds explained the aims and policies of the Auxiliary, pledging the woman's motto, Service.

The Auxiliary president was also invited to receive with the presidents and their wives at all functions and receptions.

For the first time, the Auxiliary felt it "had arrived". At this meeting, it realized what a huge organization had grown from that small group of women of four years ago. The attendance was enormous and enthusiasm very great.

Report of the Woman's Auxiliary to the Medical Society of Virginia to the A. M. A. Auxiliary in Washinton May 18.

The Virginia Auxiliary was organized in October, 1923, with an enrollment of only 25 members. December, 1926, shows a membership of 350 with eight auxiliaries and twelve counties represented.

There is a hearty co-ooperation with the Public Health officials, Parent Teachers' Associations, and Woman's Clubs.

"*Hygeia*" subscriptions have been doubled.

Interest has spread over the entire State, principally through the co-operation of the Virginia Medical Monthly whose editor has given the Woman's Auxiliary a column and each month during the year there has been published an interesting article for the doctors' wives.

The Chairman of Medical Legislation for Virginia has asked the Auxiliary to co-operate with the proposed District Professional Relations Committee for the purpose of educating the public and the law makers to secure constructive legislation regarding support of the Medical Practice Act.

This Woman's Legislative Committee did spendid work in helping to defeat the Chiropractic Bill, which was presented twice last year.

The outlook for the future in Virginia is very good.

Following the Washington meeting, Mrs. McReynolds, National president of the Auxiliary, and Mrs. Southgate Leigh, State president, stopped in Richmond, and were entertained by members of the local auxiliary. The following Monday evening, the Norfolk Auxiliary entertained Dr. and Mrs. McReynolds, the Norfolk County Society having given this evening's program over entirely to the Auxiliary. Both occasions were most enjoyable for those attending.

The Truth About Medicine

In addition to the articles enumerated in our letter of March 28th, the following have been accepted:

Abbott Laboratories
- Tablets Triturates Ephedrine Hydrochloride—Abbott, ½ grain.
- Capsules Ephedrine Hydrochloride—Abbott, ¾ grain.
- Ephedrine Hydrochloride Solution—Abbott, 3 per cent.

Parke, Davis & Co.
- Glaseptic Ampoules Mercury Salicylate—P. D. & Co., 0.065 Gm. (1 grain).
- Glaseptic Ampoules Mercury Salicylate—P. D. & Co., 0.13 Gm. (2 grains)
- Glaseptic Ampoules Mercury Succinimide—P. D. & Co., 0.01 Gm. (1/) grain).

Sigurd E. Roll
- Viking Palatable Cod Liver Oil.

Swan-Myers Co.
- Ephedrine Hydrochloride—Swan-Myers
- Capsules Ephedrine Hydrochloride — Swan-Myers, 0.0324 Gm. (½ grain).

United States Standard Product Co.
- Rabies Vaccine—U. S. S. P. (Semple Method).

NEW AND NON-OFFICIAL REMEDIES

Culture Bacillus Acidophilus—United Laboratories.—A pure culture of *B. acidophilus* in bottles, each containing about 120 cc. It contains not less than six hundred millions of viable organisms (*B. acidophilus*) per cc. at the time of sale. For a discussion of the action and uses of bacillus acidophilus preparations, see New and Non-official Remedies, 1926, p. 211, "Lactic Acid-Producing Organisms and Preparations". United Laboratories, Inc., Pasadena, Calif. (Jour. A. M. A., April 9, 1927, p. 1150).

Abbott's Mineral Oil Emulsion.—A mixture composed of liquid petrolatum, 40 cc.; agar, tragacanth and gelatin, 2 Gm.; sugar and flavoring, 2 Gm., and water sufficient to make 100 cc. It has the action of liquid petrolatum. Abbott Laboratories, North Chicago, Ill.

Ephedrine Hydrochloride—Swan-Myers.—A brand of ephedrine Hydrochloride—N. N. R. For a discussion of the actions, uses and dosage of ephedrine hydrochloride, see The Journal, A. M. A., March 19, 1927, p. 925. The product is marketed in substance and as Capsules Ephedrine Hydrochloride—Swan-Myers, 0.0324 Gm. (½ grain). Swan-Myers Company, Indianapolis.

Book Announcements

A Text-Book of Medicine. By 130 American Authors. Edited by RUSSELL L. CECIL, M. D., Assistant Professor of Clinical Medicine, Cornell University, Medical School, New York. Octavo of 1,500 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, $9.00 net.

The rapid growth of medical science during the past few years has made it almost impossible for a single individual to master the entire field. In internal medicine, as in other branches of human knowledge the age of specialism has arrived, and some of our ablest practitioners devote themselves in a great measure to one disease. In order that physicians and students of medicine might have been the benefit of an authoritative and up-to-date treatise on every medical subject, Dr. Russell L. Cecil has prepared his new text-book by bringing together in one volume the best thought of 130 of the leading teacher-internists of the country.

Some of the outstanding contributions are: Tuberculosis by Dr. Allen Krouse, Johns Hopkins, on the purely scienitfic side, while Brown and Packard, of Saranac, Soper, of Yale and Webb, of Colorado Springs write on the more practical phases of the "great white plague"—in a total of 78 pages. Dr. Cecil's monograph on pneumonia is a complete summary-record of his extensive study and treatment of this important disease, in 28 pages. Lewellys F. Barker, encaplitis lethargica; C. C. Bass, malaria; Henry Christian, nephritis—with such other names as Wm. Engelbach, Nellis B. Foster, Alexander Lambert, Dean Lewis, W. T. Longcope. George R. Minot, H. Noguchi, Martin E. Rehfuss, Milton J. Rosenau, Fritz Talbot and Douglas VanderHoof—is sufficient assurance of the ability of the contributors.

The arrangement of this book is not unlike that of any other text-book on practice. The unique feature consists in having an author of special ability discuss that disease or group of diseases with which he is most familiar. The book is destined to meet immediate favor as the profession has been surfeited with voluminous systems that are usually more ornamental than useful.

This book has but few illustrations, and is unfortunately large—so is the field of knowledge it covers—but in printing and binding it is all that could be desired and for a remarkable thing the price is reasonable. In the opinion of the reviewer it is one of the best books of this decade. H.

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Editorial

Endocarditis.

It is now nearly one hundred years (1834) since the term "endocarditis" was first employed. For an half century before this, however, clinicians recognized that, in attacks of rheumatism, the heart suffered certain damage but the actual nature thereof was not even approximately understood until Bouillaud (1834) defined this heart condition to be endocarditis, as opposed to pericarditis, and explained that endocarditis was an inflammation of the internal membrane of the heart and especially of the valves over which these membranes extend (Vaquez). From that time until the present, classifications of types of endocarditis have been under discussion. Even yet, the last word has not been written on this subject. However, to those, who follow this literature, it is becoming apparent that a more general agreement is being arrived at, although at a recent meeting of a national medical organization there were disclosed evidences, in the discussion, of a lack of full agreement as to incidence, diagnosis and prognosis of sub-acute bacterial endocarditis. For my own purposes, I shall follow Bierring[1] in a recent paper, with some modification in his definitions and classifications of endocarditis:

I. Rheumatic endocarditis, or acute verrucous endocarditis, accompanies or complicates an acute or subacute rheumatism. In this form of endocarditis the blood stream is bacteria free: although in a recent paper, Small (A. J. M. Sci. 73, 101, Jan. 27) suggests the possibility of specific bacterium obtained from the blood. The endocardium is the site of vegetations, whatever the causative microorganism of acute articular rheumatism may be.

II. Acute ulcerative, or malignant endocarditis, is a form that results from or is a part of an acute pyemia or septicemia. It runs a fatal course of from a few days to a few weeks. It is caused by an organism of an highly virulent nature.

III. Subacute bacterial endocarditis, or subacute ulcerative endocarditis, is a form of slow onset. It extends its course over a considerable period of time, and it is characterized by the pre-existence of a chronic heart lesion (usually a rheumatic lesion). It manifests phenomena of an embolic nature. The blood, on culture, shows the presence of a non-hemolytic streptococcus (S. Viridans) of a low virulence. The course of this type of endocarditis is toward fatality, although there is some doubt that it is invariably fatal.

IV. Chronic endocarditis is a terminal feature of a chronic heart malady. There art sclerotic changes in the endocardium, especially around the aortic opening, usually associated with arteriosclerosis, chronic nephritis, obesity, alcoholism and syphilis. This form is not primarily or essentially of bacterial origin.

So much for general classifications and definitions: now let us consider in detail the various forms.

Simple, acute endocarditis, with synonymous terms descriptive of its etiology and pathology, such as simple vegetative endocarditis, endocarditis verrucosa, thrombo-endocarditis superficialis, rheumatic endocarditis, is an inflammation of the valvular lining, usually of the left heart, following a preliminary infection, such as tonsillitis, rheumatic arthritis, chorea, scarlet fever, measles, gonorrhea and pneumonia. This inflammation assumes the pathologic formation of numerous minute grayish, white vegetations or verrucoses, located along the brim or edge of the valves, sometimes on the chordae tendineae or mural surface. These vegetative formations are made up of thrombotic masses of blood platelets, white and red cells, and fibrin.

Acute, malignant (septic), ulcerative endo-

(1) Bierring: J. A. M. A., Vol. 87, No. 7, pg. 464.

carditis is a progression of pathology found in the simple acute type. The thrombi are larger and ultimately undergo disintegration and ulceration. These ulcers occur on the valve and some times on the mural surface. In the circulating blood of this type, by blood culturing, there have been recovered, streptococci, pneumoncocci, staphylococci and gonococci. In post-mortem examinations the same organisms have been gotten from smears taken from these ulcerations. In this malignant form of endocarditis there is observed clinically exfoliative phenomena of the disease. During the rapid course of this type there occur signs of septic emboli which cause infarction of the peripheral blood vessels in kidneys, spleen, heart and brain. The mitral valve is the favorite site of the primary lesions although progressive involvement may take place over the entire left ventricular endocardium. By some, it is thought that aortic endocarditis of this type alone does occur. Syphilitic pathology of the heart, having been shown to occur more particularly at the aortic opening, involving aortic valve and ascending aorta, renders the statement of the older clinician as to frequent occurrence of simple or ulcerative endocarditis without luetic infection at aorta open to some question. The right heart is rarely involved in infective endocarditis although sometimes it does occur, possibly oftener than now thought.

Diagnostic signs of these forms of endocarditis should be looked for during the active, or following immediately the subsidence of rheumatic fever, tonsillitis, scarlet fever, pneumonia and septic fever of all sorts. The simplest form may never show gross heart signs; often careful and discriminating physical examination is needed in order to elicit the initial adventitious signs; in the rheumatic attacks the heart may be overlooked (because severe arthritic pains overshadow signs of heart involvement). Rapid systoles, irregular systoles, a septic course of fever, without new joint involvement, during a course of rheumatic fever, are harbingers of endocarditis. A septic course temperature, associated with regurgitant murmurs and bruit may appear later. With the ulcerative endocarditis, one may expect, too, embolic and other aggravated heart signs, involving valvular and muscular structures of the heart. Sudden death from embolic infarcts may follow a rapid and moderately rapid septic sickness, displaying rigors, fever, anemia, emaciation, cardiac distress, dyspnea and spectacular symptoms showing themselves in the brain, spleen, eyes, kidneys, liver, joints, blood vessels and blood system. With such a sky-rocketing symptomatology, malignant ulcerative endocarditis culminates its terminal stage.

Chronic endocarditis may be mentioned at this point, if one understands that, in using the term endocarditis, one is not dealing with bacterial inflammation *per se*, if at all, but with a sclerotic thickening of valve-endocardium in the more or less aged heart. These endocardial degenerative pathologic stigmata accompany or follow the other marks of advancing age. It is found in the chronic alcoholic, the chronic "over eater", the hyperplastic syphilitic, the gouty (whatever that means), the patients with chronic focal infections who have acquired nephritic disease, and in the arteriosclerotic. In such patients the heart valves have become thickened, nodular and sclerotic. This pathologic formation at the aortic ring and on the aortic valve imparts a peculiarly metallic and high pitched note to the aortic element of the second sound, or it produces a murmur preceding or in connection with it or supplanting it. The mitral structures may be also caught up in this sclerosis of the left endocardium. At the mitral area also one may elicit presystolic obstruction or regurgitation murmurs, associated with cardiac muscular hypertrophy which is compensating to meet the physical malformations of the valve disease.

Subacute Bacterial Endocarditis

This is distinctly an entity in endocarditis. It has certain clear cut individualities. Certain ear-marks are quite essential to know in order to understand it and certain in order to unearth it sometimes when hidden by an obscure initial symptomatology. It is by the following signs that this type is recognized and diagnosed:

First, in subacute bacterial endocarditis, there pre-exists valvular heart lesions (or pathology): there already has existed chronically injured valvular endocardium. This valvular lesion may or may not have been clinically known. Besides, subacute bacterial endocarditis is a disease of adult life: and the specific bacterium usually engrafts itself upon the left side of the heart: mitral valve

far more often than aortic valve structures; only a few cases of right side infection have been noted. There is usually an undetermined period of years between the primary rheumatic endocarditis with its apparent healing, and the subsequent appearance of subacute bacterial endocarditis of which we now are speaking. This "return engagement" is brought about mainly by the inoculation of two organisms; one of the streptococcus group, streptococcus viridans, a non-hemolytic streptococcus covering ninety-five per cent of these infections; and, the other of bacillus influenza group producing about five per cent of the remaining occurrences. This type of endocarditis is of low virulence and displays evidence of an embolic but not of pyogenic nature. But the deadly progress of the malady in no manner is forestalled by the peculiarity of these phenomena, so characteristic of acute malignant endocarditis, except in the saving quality of its slowness. Subacute bacterial endocarditis cases show usually the occurrence in the blood stream of non-hemolytic strain of the streptococcus but, as Gow says, the positive finding of this strain of streptococcus is of great diagnostic importance, while a negative, conversely, is of little importance.

News Notes

Medical College of Virginia Finals.

Commencement exercises of the Medical College of Virginia got under way on Saturday evening, May the 28th, with "stunt" night exercises, which were held in the auditorium of John Marshall High School. The following night, Rev. Charles L. King, D. D., pastor of Grace Covenant Presbyterian Church, delivered the baccalaureate sermon to the graduates. The alumni celebration was held at Commonwealth Club on Monday evening. The annual meeting of the alumni association was held on the following morning with the usual alumni luncheon afterwards. The ball game of alumni and faculty versus students was played that afternoon, and closing exercises at the City Auditorium on that evening were followed by the usual dance and reception at Commonwealth Club. Dr. Hugh S. Cumming, Surgeon General of the U. S. Public Health Service and an alumnus of the former University College of Medicine, Richmond, was the orator at the closing exercises. Following the awarding of diplomas, the honorary degree of Doctor of Science was conferred upon Dr. Cumming by the College.

This year, there were eighty-five graduates in medicine. These with hospital appointments are as follows:

Memorial Hospital, Richmond—Drs. Hendrick A. Bracey, Bracey; William T. H. Brantley, Roanoke Rapids, N. C.; G. Norfleet Carter, Boydton; Herman S. Fletcher, Richmond; Charles R. Hoskins, Jr., Newport News; E. Claude Jamison, Boone Mill; Jeremiah Robert Johnson, Winston-Salem, N. C.; Orvin C. Jones, Richmond; James W. Keever, Hickory, N. C.; Blake W. Meador, Richmond; Edmund E. Robinson, Concord, N. C.; Malcolm S. Stinnett, Buchanan; Judson T. Vaughan, Ashland; John C. White, Bedford.

Johnston-Willis Hospital — Drs. John R. Hamilton, Clarksburg, W. Va.; W. Cary Henderson, New Canton; Alpheus H. Wood, Emporia.

Retreat for the Sick, Richmond—Drs. William L. Ball and Julian E. Trainum, of Richmond.

St. Elizabeth's Hospital, Richmond — Dr. Paul E. Prillaman, Callaway.

St. Luke's Hospital, Richmond—Drs. Edward Lee Alexander, Ellerson; Walter O. House, Norfolk; A. A. Milburn, Hinton, W. Va.

Stuart Circle Hospital, Richmond — Drs. Charles L. Newland, Jackson, Ky.; Edward N. Pleasants, Richmond; Felix B. Welton, Moorefield, W. Va.

Tucker Sanatorium, Richmond—Dr. J. Warren Hundley, Jr., Richmond.

Grace Hospital, Richmond—Dr. Irwin Rifkin, Richmond, and Mr. W. F. Fitzhugh, undergraduate.

Sheltering Arms Hospital, Richmond — Dr. Rufus C. Alley, Bristol, and Mr. W. R. Gladding and Mr. A. P. Hudgins, undergraduates.

Children's Memorial Clinic, Richmond—Mr. N. C. Patterson, undergraduate.

City Home Hospital, Richmond—Messrs. M. M. Fields, W. C. Jackson and D. F. Love, undergraduates.

City Jail Hospital, Richmond — Mr. L. H. Bracey, undergraduate.

Convalescent Hospital, Richmond — Mr. George Hess, undergraduate.

Home for Incurables, Richmond—Mr. R. W. Southerland, undergraduate.

Hygeia Hospital, Richmond—Messrs. A. L. Baker and C. L. Brother, undergraduates.

Penitentiary Hospital, Richmond—Mr. C. G. Bennett, undergraduate.

Soldiers' Home Hospital, Richmond—Mr. C. L. Neale, undergraduate.

George Ben Johnston Memorial Hospital, Abingdon, Va.—Dr. Arthur D. Hutton, Glade Spring.

St. Agnes Hospital, Baltimore, Md. — Drs. Thomas S. Bowyer, Emory; Eliot W. Johnson, Kipling, N. C.

Johns Hopkins Hospital, Baltimore, Md.—Dr. Harvey C. Brownley, Norfolk.

St. Joseph's Hospital, Baltimore, Md.—Dr. Joseph V. Castagna, Baltimore, Md.

West Baltimore General Hospital, Baltimore, Md.—Dr. S. Charles Feldman, Baltimore, Md.

Mercy Hospital, Baltimore, Md.—Dr. Victor K. Young, Bloxom.

Boston Floating Hospital, Boston, Mass.—Dr. Frederick U. Metcalf, Roanoke.

Long Island Hospital, Boston, Mass.—Dr. Thomas W. McBane, Greensboro, N. C.

Unity Hospital, Brooklyn, N. Y.—Dr. Martin H. Greenfield, Brooklyn, N. Y.

Charleston General Hospital, Charleston, W. Va.—Drs. A. R. Lutz, Orkney Springs; Thomas N. Spessard, Richmond.

Mountain State Hospital, Charleston, W. Va.—Dr. Roy R. Summers, Clendenin, W. Va.

St. Elizabeth Hospital, Covington, Ky.—Drs. Leo E. Hayes and Leo Jacobs, Richmond.

Fitzsimmons General Hospital, Denver, Colorado—Dr. Seth Gayle, Jr., Richmond.

Hazelton State Hospital, Hazelton, Pa.—Drs. Robert L. Eastman, Frederickstown, Ohio; Earl J. Haden, East Leake.

Chesapeake & Ohio Hospital, Huntington, W. Va.—Drs. Raymond E. Bailey, Hamlin, W. Va.; Dana L. Cavendish, Rainelle, W. Va.; Raymond H. Curry, Hamlin, W. Va.; Carl C. Jackson, Big Chimney, W. Va.

Guthrie Hospital, Huntington, W. Va.—Dr. Byford H. Denman, Lufkin, Texas.

St. Mary's Hospital, Huntington, W. Va.—Dr. Harry E. Beard, Huntington, W. Va.

People's Hospital, New York, N. Y. — Dr. Harry A. Dick, New York, N. Y.

Columbus Hospital, New York, N. Y.—Dr. Vincent J. Felitti, New York, N. Y.

Metropolitan Hospital, New York, N. Y.—Dr. Emanuel Roth, Brooklyn, N. Y.

New York Polyclinic Hospital, New York, N. Y.—Dr. Stanley F. Stockhammer, New York, N. Y.

Fifth Avenue Hospital, New York, N. Y.—Dr. Wilbur S. Stakes, Richmond.

St. Vincent's Hospital, Norfolk, Va. — Drs. Valentine Caso, New York, N. Y.; Charles B. Martin, Concord Depot; Willard P. Smith, Newport News.

Petersburg Hospital, Petersburg, Va.—Dr. Clabe W. Lynn, Raleigh, N. C.

Alleghany General Hospital, Pittsburgh, Pa.—Dr. William L. Madera, Morgantown, W. Va.

Lewis-Gale Hospital, Roanoke, Va. — Drs. Oliver L. Jones, Powcan; Maury C. Newton, Bluefield.

Letterman General Hospital, San Francisco, Cal.—Dr. L. Holmes Ginn, Jr., Berryville.

Municipal Hospital, San Juan, Porto Rico—Drs. Juan N. Colon, Cidra, P. R.; Jose C. Collazo, Rio Piedras, P. R.

Lakeview Hospital, Suffolk, Va.—Dr. John R. Ellison, Jr., Suffolk.

Holy Name Hospital, Taeneck, N. J.—Dr. Sidney F. Johnston, East Radford.

Tampa Municipal Hospital, Tampa, Fla.—Dr. Louis S. Leo, Richmond.

Walter Reed Hospital, Washington, D. C.—Dr. James T. Tucker, Huntington, W. Va.

James Walker Memorial Hospital, Wilmington, N. C.—Dr. William S. Jones, Nashville, N. C.

City Memorial Hospital, Winston-Salem, N. C.—Dr. Lester L. Anderson, Advance, N. C.

N. C. State Baptist Hospital, Winston-Salem, N. C.—Dr. Joseph T. McCastor, Richmond.

U. S. Government Marine Hospital — Dr. Palmer A. Shelburne, Richmond.

In addition to the above list, the following were awarded their diplomas in medicine, but no hospital appointments have been announced as we go to press:

Dr. Henry C. Davis, Honaker, Va.
Dr. Arnold J. Given, Big Chimney, W. Va.
Dr. Carman I. Martin, Maysville, W. Va.
Dr. Peter Pagano, Ridgewood, N. J.
Dr. John W. Parker, Jr., Emporia, Va.
Dr. Joseph T. Peters, Princeton, W. Va.
Dr. Percy P. Pharr, Gap Mills, W. Va.
Dr. William H. Powell, Jr., Fayetteville, N. C.
Dr. Frank F. Sowers, Landgraff, W. Va.

Committees in Charge of Petersburg Meeting, Medical Society of Virginia.

Petersburg doctors have begun working to make our fifty-eighth annual meeting to be held in that city in October a success. Needless to say, it is up to each member of the Society to do his or her part by at least attending, if possible. Put the dates in your note book now. They are October 18, 19 and 20, 1927.

Dr. J. Bolling Jones has been appointed general chairman of the local committee of arrangements, and the following committees will have charge of various aspects of the work.

RECEPTION AND AUTOMOBILES: Dr. L. S. Early, *Chairman*, Dr. D. C. Mayes, Dr. W. B. McIlwaine, Dr. W. A. Reese, Dr. E. W. Perkins, Dr. W. M. Bowman.

BADGES, PRINTING AND PUBLICITY: Dr. Wright Clarkson, *Chairman*, Dr. W. C. Moomaw, Dr. H. M. Snead, Dr. R. E. Wilkinson, Dr. D. D. Willcox, Dr. J. E. Smith, Dr. P. L. Hill.

GOLF: Dr. W. P. Hoy, *Chairman*, Dr. W. B. McIlwaine, Dr. Herbert C. Jones, Dr. Meade C. Edmunds, Dr. J. M. Harwood.

FINANCE: Dr. William F. Drewry, *Chairman*, Dr. R. H. Manson, Dr. Herbert C. Jones, Dr. C. S. Dodd. Dr. R. A. Martin, Dr. J. M. Williams

ENTERTAINMENT: Dr. Mason Romaine, *Chairman*, Dr. E. L. McGill, Dr. H. C. Henry, Dr. J. Bolling Jones, Dr. W. I. Prichard, Dr. Ruth S. Mason.

COMMERCIAL AND SCIENTIFIC EXHIBITS: Dr. W. C. Powell, *Chairman*, Dr. George S. Fultz, Dr. C. T. Jones, Dr. W. S. Briggs, Dr. E. W. Young, Dr. E. J. Nixon, Dr. James H. Hargrave.

HOTELS AND MEETING HALL: Dr. E. L. McGill, *Chairman*, Dr. George H. Reese, Dr. J. D. Osborne, Dr. R. T. Hawks, Dr. Mason Romaine, Dr. J. R. Beckwith.

The ladies have not been forgotten and a committee is to be named shortly to look after their pleasure and arrange for meetings of the Woman's Auxiliary.

American Medical Association.

Any one attending the Washington meeting of the American Medical Association, last month, must have been impressed with the idea that there is something in medical organization for such a vast crowd to have been attracted to the sessions from all parts of the States and a few foreign countries. Truly, it was an inspiration to see so many on one purpose bent. There was a registered attendance of 6,273. Three hundred and ninety-four of these were from Virginia. There was something of interest for everyone and spare minutes were filled in with sight seeing in the Nation's capital. Many side trips had been arranged for the visitors and the annual reception for the president and president-elect of the Association at the Mayflower Hotel was a brilliant affair. Numerous alumni and fraternity gatherings were held. Virginia was represented in the House of Delegates by Drs. Southgate Leigh, J. W. Preston and E. C. S. Taliaferro.

The exercises held in the amphitheatre at Arlington National Cemetery, in memory of members of the Association who gave their lives in the World War, were most impressive and will long be remembered by those who were fortunate enough to attend. On this occasion it was stated that the first American soldier to be killed by the enemy in the World War was a physician. The exercises were in memory of the five hundred medical officers who died from all causes duing the World War, and were concluded with the placing of a wreath on the tomb of the unknown soldier by Dr. Wendell C. Phillips, at that time president of the Association.

The House of Delegates selected Minneapolis, Minn., for the next annual session of the Association and elected Dr. William S. Thayer, Baltimore, Md.; as president-elect, and Dr. Charles A. Elliott, Chicago, Ill., as president. Dr. Jabez N. Jackson, Kansas City, Mo., succeeded to the presidency, and other officers were re-elected.

The Augusta County Medical Association

Held its tri-monthly meeting in Staunton, May 4th, with a good attendance. Clinical cases were reported by several of the members, following which several papers were read. An interesting feature of this meeting was the donation of $100.00 for the relief of the flood sufferers in the Mississippi Valley.

Dr. H. G. Middlekauff, Weyers Cave, is president of this society, and Dr. W. F. Hartman, Staunton, R. D. 7, secretary.

Russell County Medical Society

Recently re-organized after being inactive for sometime, and elected Dr. T. T. McNeer,

Dante, president, and Dr. S. C. Couch, Cleveland, secretary.

The Nelson County Medical Society

Held its regular meeting on May 31st, and elected Dr. J. F. Thaxton, Tye River, as president for the ensuing year, and Dr. W. D. Meeks, Massies Mill, secretary-treasurer. Dr. B. F. Randolph, Arrington, was named delegate to the Petersburg meeting of the State Society, with Dr. E. C. Kidd, of Lovingston, as alternate.

The Walter Reed Medical Society

Held its annual meeting at Yorktown, Va., May 26 and 27, under the presidency of Dr. J. W. C. Jones, of Newport News. The meeting was well attended and interesting papers were read by a number of members and invited guests. The Society voted a donation of $100.00 to the Walter Reed Memorial Fund. Dr. W. W. Kerns, of Bloxom, was elected president and the following were elected vice-presidents: Dr. C. B. Courtney, Newport News; Dr. H. G. Longaker, Newport News; Dr. R. A. Davis, Newport News; Dr. M. W. Crafford, Lee Hall; and Dr. L. O. Powell, Seaford. Dr. L. E. Stubbs and Dr. J. E. Marable, both of Newport News, were re-elected secretary and treasurer, respectively. The meetings are held at Yorktown.

The Medical Association of the Valley of Virginia

Held its semi-annual meeting in Clifton Forge, May 26th, the president, Dr. A. F. Robertson, Jr., of Staunton, presiding. There was an attendance of about fifty and an interesting program had been arranged. Dr. A. A. Berg, of New York City, was an invited guest. The Association voted to hold its next meeting in Winchester on the last Tuesday in September. Dr. H. G. Middlekauff, of Weyers Cave, is secretary.

Dr. J. G. Bentley

Announces his removal from Norton to Blackwood, Va.

Dr. S. B. Nickels

Has returned to his home at Clinchport, Va., after taking special post-graduate work in medicine at the Washington University Medical School and St. Louis clinics, St. Louis, Mo.

Dr. and Mrs. Fauntleroy Flinn,

Of Decatur, Ill., but who for a time made their home in Roanoke, Va., were recently called to his old home at Alberta, Va., on account of the illness of his mother.

The Virginia State Dental Association

Held its annual meeting at Cavalier Hotel, Virginia Beach, early in May. It was decided to hold the 1928 session in Roanoke. Dr. W. G. Delp, of Rural Retreat, succeeded to the presidency, Dr. R. C. Walden, Richmond, was made president-elect, and Dr. A. M. Wash, Richmond, was re-elected secretary-treasurer.

Dr. Thomas Duckett Jones Awarded Fellowship.

Dr. Thoms Duckett Jones, son of Dr. and Mrs. J. Bolling Jones, of Petersburg, Va., and now instructor in medicine at the University of Virginia, Medical Department, has been awarded a fellowship for foreign study by the National Research Council. He will leave September 1st for London, where he will spend a year studying diseases of the heart with Sir Thomas Lewis.

The Graduate Nurses' Association of Virginia,

At its annual meeting held at Norfolk in May, elected the following officers: President, Miss Martha V. Baylor, Roanoke; vice-presidents, Miss Ruth Epperson, Norfolk; Miss Elizabeth Ritz, Richmond, and Miss Carrie M. Copenhaver, Bristol; secretary, Miss Lily W. Walker, Danville; and treasurer, Miss. Florence A. Bishop, Portsmouth. Miss L. L. Odom, Norfolk; Miss Josephine McLeod, University, and Miss Agnes D. Randolph, Richmond, were re-elected directors.

Dr. Henry A. Christian,

Physician in-chief to the Peter Bent Brigham Hospital, Boston, Mass., a native of Lynchburg, Va., addressed the graduating class of the Virginia Baptist Hospital, in that city, at their closing exercises, the last of May.

Dr. and Mrs. H. Inberg,

Of Danville, Va., sailed the latter part of May from New York, for a tour of Europe and will be away until August.

Dr. George P. McCoy,

Of Covington, Va., has moved to Hopewell, Va., where he will engage in general practice.

The Association of Southern Railway Surgeons,

At its recent meeting in Mobile, Ala., selected Norfolk, Va., as its next meeting place and elected the following officers: President, Dr. Arthur T. Pritchard, Asheville, N. C.; vice-presidents, Drs. Richard J. Payne, St. Louis, Mo., M. B. Carr, Tazewell, Tenn., and H. S. Black, Spartanburg, S. C. Miss Edith A. Foltz Washington, D. C., was re-elected secretary-treasurer.

Philadelphia College of Pharmacy and Science.

Dr. Wilmer Krusen, new president of the College, was given a reception, on May 27th, at the Bellevue-Stratford Hotel, Philadelphia, by the Board of Trustees of the College.

Dr. Charles O'H. Laughinghouse,

Raleigh, N. C., has been elected secretary of the North Carolina State Board of Health and State Health Officer for a period of six years.

The Virginia Society of Oto-Laryngology and Ophthalmology

Held its annual meeting in Charlottesville, the last of April, under the presidency of Dr. Clifton M. Miller, of Richmond. At this meeting it was decided that a prize would be awarded each year for the best paper to be presented by a member of the society. The following officers were elected for the coming year: President, Dr. C. S. Dodd, Petersburg; vice-president, Dr. Frank Hanger, Staunton; secretary-treasurer, Dr. Fletcher D. Woodward (re-elected), University. The 1928 meeting will be held in Newport News.

Dr. Taswell P. Haney, Jr.,

Of Burnsville, Miss., who graduated in medicine at the University of Virginia, in 1926, has been elected full-time health officer of Tishomingo County, Mississippi.

The Medical Society of the State of North Carolina,

At its annual meeting at Durham, in April, elected Dr. John T. Burrus, of High Point, president, and re-elected Dr. L. B. McBrayer, Southern Pines, secretary-treasurer. Drs. G. H. Macon, of Warrenton, Robert F. Leinbach, of Charlotte, and William R. Griffin, of Asheville, were elected vice-presidents.

Dr. Charles W. Putney,

Formerly of Staunton, Va., has just completed a post-graduate course in surgery at the University of Pennsylvania, and will spend the summer visiting surgical clinics in Baltimore, Cleveland, Chicago, and Rochester, Minn.

Dr. F. L. Thurman,

Of Buena Vista, Va., sailed from New York on May the 25th, to attend the annual meeting of the Rotary International which will be held in Belgium.

The American College of Radiology

Held a most interesting meeting in Washington, D. C., during the meeting of the American Medical Association. This organization is interested in work done both with X-ray and radium and has an active membership limited to one hundred in the United States and Canada. Drs. A. L. Gray and D. D. Talley, of Richmond, are the only Virginia members. An outstanding event in this meeting was the conferring of honory fellowship upon Dr. Wm. Duane, Professor of Physics at Harvard University, and upon Dr. William D. Coolidge, renowned American chemist, of the Research Department of the General Electric Company. These are the first Americans to be so honored by the College. Dr. Coolidge was also presented by the College with a medal in recognition of his outstanding contributions to the art and science of roentgenology.

Dr. M. J. Hubeny, of Chicago, succeeded to the presidency, and Dr. A. L. Gray, of Richmond, Va., was made president-elect. Other officers elected at this meeting are: Vice-president, Dr. Howard E. Ruggles, of San Francisco; secretary, Dr. Albert Soiland, Los Angeles; treasurer, Dr. Benj. H. Orndoff, Chicago; historian, Dr. I. S. Trostler, Chicago; and Dr. L. J. Menville, of New Orleans, and Dr. T. A. Groover, of Washington, D. C., were elected members of the board of chancellors.

Dr. Guy Hinsdale,

Of Hot Springs, Va., left the first of June for his summer home at Kennebunkport, Me., and will remain there until the middle of September.

Dr. Sheppard K. Ames,

Of the class of '25, University of Virginia, Medical Department, upon completion of an

internship at St. Joseph's Hospital, Baltimore, Md., located at Cape Charles, Va., where he is now engaged in the practice of medicine.

Professor of Pediatrics at Johns Hopkins.

Dr. E. A. Park, after six years at Yale University, will return to Johns Hopkins, Baltimore, in September as professor of pediatrics and pediatrician-in-chief of Johns Hopkins Hospital, succeeding Dr. John Howland who died last June.

Dr. Joseph Caplan,

University of Virginia, Medical Department, class of '25, since completing an internship at Hebrew Hospital, Baltimore, Md., has been at the Presbyterian Eye, Ear and Throat Charity Hospital, in that city.

New Hospital to be Built at Saltville, Va.

Plans have recently been completed for building a modernly equipped 45-bed hospital at Saltville, Va.

The Tennessee State Medical Association,

At its annual meeting, recently held at Chattanooga, elected Dr. William B. Malone, of Memphis, president, and Dr. Harrison H. Shoulders, of Nashville, was elected full-time secretary and editor of the state medical journal.

Dr. Fred J. Wampler,

Recently returned from China, is now county health officer for Accomac and Northampton Counties, with headquarters at Accomac, Va. He succeeded Dr. Robert P. Cooke who is now in charge of a similar work in Lexington and Rockbridge County, Virginia.

Dr. Welch Awarded Medal.

Dr. William H. Welch, professor of history of medicine at Johns Hopkins Medical School, was awarded the 1927 medal for scientific research in medicine, by the Association of American Physicians at its recent meeting in Atlantic City, N. J.

Dr. Samuel Newman

Has returned to his home in Danville, Va., after spending sometime in New York, where he took special courses in his specialty at the the Neurological Institute and the Vanderbilt Clinic.

Dr. A. M. Byrd,

Formerly with Dr. W. R. Williams, at Richlands, Va., and who recently has been with the U. S. P. H. S., Hot Springs National Park, Arkansas, is now associated with Dr. H. R. Connell, at Northfork, West Virginia. He is limiting his work to venerology and proctology.

Dr. Charles L. Minor,

Asheville, N. C., has returned home after spending several months visiting European clinics.

The Hospital Clinical Congress of North America

Has announced its annual meeting for June 20th to 24th in Milwaukee, Wis., under the auspices of the College of Hospital Administration of Marquette University. This meeting promises much of interest to all connected with hospital work. Communications concerning the meeting should be addressed to College of Hospital Administration, 124 Thirteenth Street, Milwaukee, Wisconsin.

Dr. E. P. Cox,

Norton, Va., was a visitor in Richmond the early part of May.

Two Richmond Doctors Honored.

Dr. Frank Johns and Dr. Manfred Call, both of Richmond, Va., were elected associate members of the American Association for Thoracic Surgery at its recent meeting in New York.

Dr. D. Hunter Marrow

Has returned to his home at Union Level, Va., for the summer months, after spending the winter at Daytona Beach, Fla.

Dr. R. A. Vonderlehr,

Formerly of Richmond, Va., but now with the U. S. Public Health Service, has just been ordered to Washington, D. C., for training in neuropsychiatry at St. Elizabeth's Hospital, that city.

Dr. Emory Hill,

Richmond, recently addressed the Norfolk County Medical Society, his subject being "Sinus Disease in Relation to Ocular Infection."

Dr. R. W. Browne,

Formerly with the Public Health Service at Norfolk, Virginia, and who has lately been in charge of the U. S. Veterans' Hospital at St. Paul, Minnesota, has just been transferred to Ft. Bayard, New Mexico, and will be Medical Officer in Charge of the U. S. Veterans' Hospital at that place.

The West Virginia State Medical Association

Will hold its sixtieth annual meeting at White Sulphur Springs, June 21-23, inclusive, under the presidency of Dr. Chester R. Ogden, of Clarksburg. An unusually attractive program has been arranged and a large attendance is expected. Mr. Joe W. Savage recently succeeded Mr. Sterrett O. Neale, resigned, as secretary.

Dr. Stephen H. Watts

Has resigned as professor of surgery and gynecology at the University of Virginia, his resignation to take effect September 1st.

Dr. Edith J. Lacy,

Assistant physician at the Eastern State Hospital, Williamsburg, Va., resigned her position at the hospital, effective June 1, as she expects to go to India for medical service.

The Association of American Physicians,

At its recent meeting, elected Dr. A. S. Warthin, of Ann Arbor, Mich., president for the succeeding year, and Dr. James H. Means, of Boston, Mass., secretary. The next meeting is to be held in Washington, D. C., in May, 1928.

Aloe's Removal.

The well known surgical supply house of A. S. Aloe Company in St. Louis has been crowded out of their contracted quarters at 513 Olive Street, (the optical store remains there) and are now located in the new Aloe Surgical Building at 1819-23 Olive Street—only three blocks from the Union Station. The removal was necessitated by lack of downtown parking facilities and the growth of their surgical business which required larger and better quarters. Visiting physicians should take note of the new location near the railway center.

This Company will be glad to send the Aloe Catalog to any of our readers upon request.

Dr. Harry Goldstein,

Of the class of '26, Medical College of Virginia, has located in Roanoke, Va., for the practice of medicine.

Dr. Israel Brown Honored.

Announcement has been made of the appointment of Dr. Israel Brown of Norfolk, Va., as a member of the national distinguished guest committee of the American Legion. He is the third Virginian to hold a post in the national legion organization.

Sight-Saving Classes.

Several universitites are this year offering courses for the training of teachers for sight-saving classes during the summer session. The National Committee for the Prevention of Blindness, with headquarters at 370 Seventh Avenue, New York City, announces that there are now 265 sight-saving classes in the United States while there is need for approximately 5,000 to provide a normal education for children with seriously defective vision without imposing an undue strain on the little remaining sight of such children.

The significance of these sight-saving classes to the public at large is the fact that it costs ten times as much to educate a blind child as it does a normally sighted child. The experience from such classes already in existence shows that it is now possible to educate in the public schools many children with seriously defective vision who, though not blind, formerly found their only opportunity for education in schools for the blind.

Dr. H. D. Ribble

Has returned to his home just outside of Blacksburg, Va., after spending the winter months at Mount Hope, W. Va.

Virginia Tuberculosis Association.

At a called meeting of the board of directors of the Association recently, Mr. Julien Gunn, of Henrico County, was elected president to fill the vacancy caused by Dr. R. A. Martin's having declined to serve. Dr. H. A. Latane, Alexandria, was elected to succeed Mr. Gunn as first vice-president.

Halycon Hospital to be Re-opened.

It is announced that Halcyon Hospital, South Boston, Va., formerly owned and operated by Dr. H. S. Belt, has been leased by Drs. I. K. Briggs, George A. Stover, H. H. Hurt and G. E. Faulkner, of South Boston, and will be re-opened this month.

Dr. E. L. Caudill,

Narrows, Va., has been edected president of the Cavalier Hosiery Mills which is to be opened in that place.

Dr. V. W. Quillen,

Of Nickelsville, Va., who has been taking post-graduate work in New York City, has decided to finish the three months' course in the

medical seminar, while there, so will not return home until early in July instead of in June as he at first planned.

Interesting Booklet.

Johnson and Johnson, New Brunswick, N. J., one of our advertisers, has just published an exceedingly interesting and attratcive booklet, entitled "When the Medical Profession of New York Paid Homage to 'The Autocrat of the Breakfast Table' April 12th, 1883." On this occasion, a public dinner was given to Dr. Holmes just after he resigned as a professor at Harvard. The booklet is profusely illustrated and attractively arranged. Johnson and Johnson are to be congratulated upon the creditable way in which they have honored Dr. Holmes.

Dr. Edgar W. Young,

Of Petersburg, Va., has resumed his practice in that city after being a patient at St. Luke's Hospital, Richmond, for a month.

Dr. Charles E. Dyer,

Recently of Pulaski, Va., has moved to Roderfield, W. Va., where he will be physician for several coal companies.

Wanted.

Spendid location open for physician in Southside Virginia town, population 4,500 to 5,000, with good surrounding territory. If interested, write to "G. D. C.," care this journal. (Adv.)

Wanted.

Spendid location open for colored physician in Southside Virginia town of 4,500 to 5,000 population, with good surrounding territory. If interested write to "X. Y. Z.", care this journal. (Adv.)

Obituary

Dr. Leslie C. Brock,

Smithfield, Va., a prominent physician of Tidewater Virginia, died at his home in that place on May 24th, following a stroke of paralysis which he suffered on the preceding day. Dr. Brock was a native of Isle of Wight County and fifty-four years of age. He was graduated in medicine from the Medical College of Virginia in 1894 and shortly thereafter located in Smithfield. He had been mayor of Smithfield for the past twenty-two years and was active in the civic and professional affairs of his community. He was a member of the Medical Society of Virginia and also of Smithfield Lodge, No. 18, A. F. & A. M. His wife survives him.

Dr. Robert T. Glassell,

A prominent physician of Bowling Green, Va., died at his home in that place, June 4th, after an illness of a year. Dr. Glassell was born in Bowling Green seventy-three years ago and, after his academic education, studied medicine at the University of Maryland, from which he graduated in 1886. He had been a member of the Medical Society of Virginia since 1889. He is survived by three daughters and several sisters.

Dr. J. K. Simmons,

Nace, Va., Confederate veteran and a member of the Medical Society of Virginia, died at his home in Botetourt Cunty, April 9, of heart disease. He was eighty-six years of age and graduated from the Medical College of Virginia in 1869.

Major Albert Gallatin Franklin,

Of the U. S. Army Medical Corps, formerly of Richmond, Va., died June 1st at Walter Reed Hospital, Washington, D. C., at the age of fifty-four years. He received his medical diploma from the former University College of Medicine, Richmond, Va., in 1897, and practiced in this city for several years before entering the U. S. Army. He is survived by his wife and two sons.

Dr. Charles Sterling White,

Of Winston-Salem, N. C., died April 18th of injuries received in an automobile accident. Dr. White was twenty-five years of age and graduated from the Medical College of Virginia two years ago, following which he accepted an internship at City Memorial Hospital in Winston-Salem.

Mrs. Fanny Berkeley Barham,

Wife of Dr. W. B. Barham, of Newsoms and Big Stone Gap, Va., died May 22nd, after an illness of several months. She is survived by her husband and two daughters, Mrs. J. A. Grizzard, of Drewyville, and Mrs. James M. Smith, of Big Stone Gap.